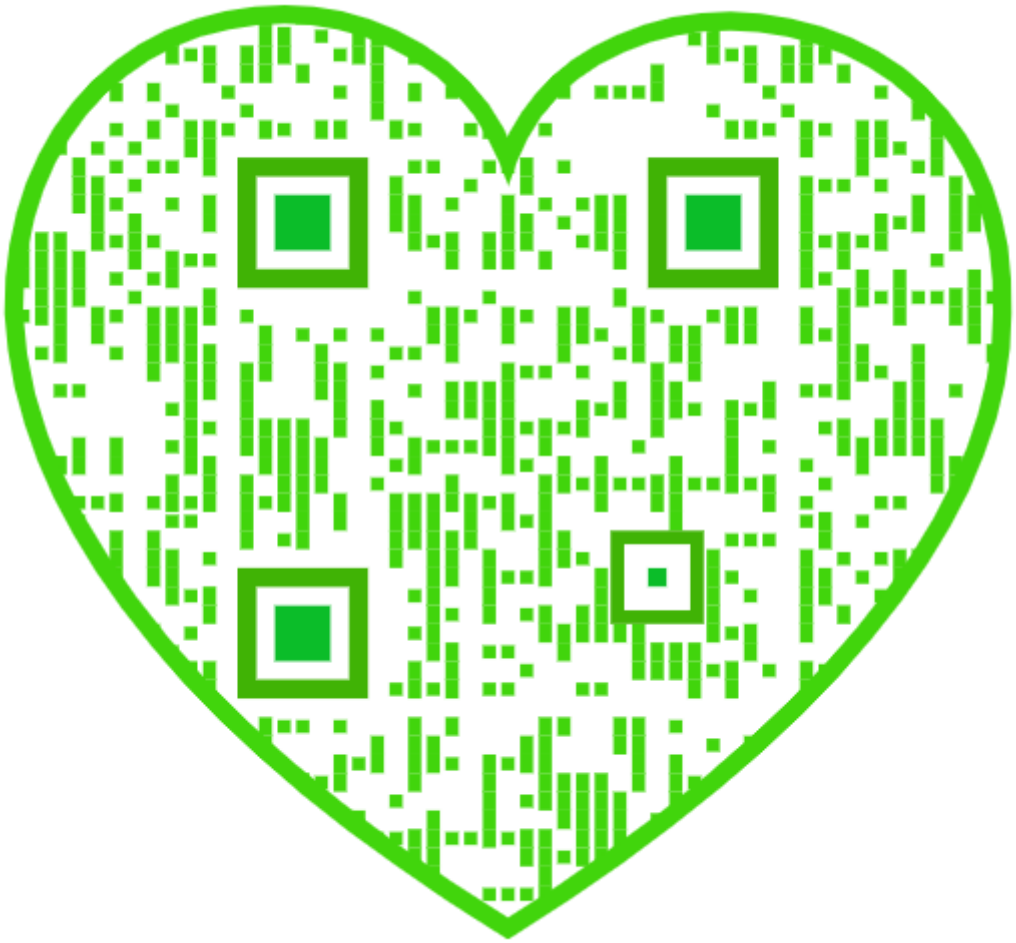

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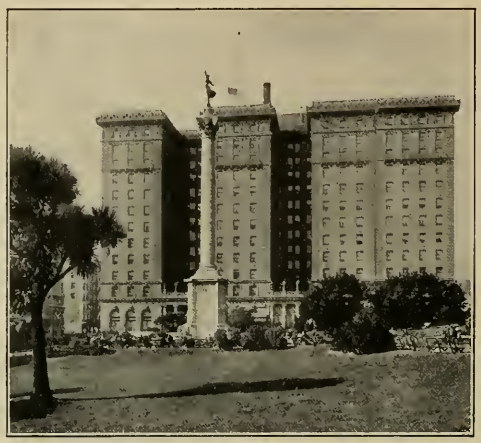

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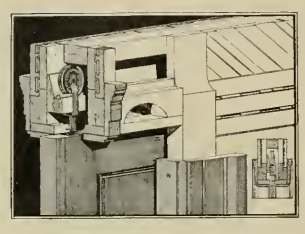

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Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Livermore Fire Brick Co., Livermore, Cal.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Steiger Terra Cotta & Pottery Works, Mills Bldg., San Francisco.

BRICK—PRESSED, PAVING, ETC.—Continued.
United Materials Co., Crossley Bldg., San Francisco.

BRICK AND CEMENT COATING
Wadsworth, Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Pacific Coast Agents.)
Glidden Products, sold by Whittier-Coburn Co., Howard and Beale Sts., San Francisco.

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Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
Bituring Company of America, 24 California St., San Francisco.
C. Roman, 173 Jessie St., San Francisco.
C. F. Pratt Building Material Co., Hearst Bldg., San Francisco.

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Medusa White Portland Cement, sold by Building Material Co., Inc., Monadnock Bldg., San Francisco.

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CEMENT EXTERIOR WATERPROOF COATING —Continued.
"Impervite" sold by E. A. Bullis & Co. (See advertisement on page 26.)
Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)

CEMENT EXTERIOR FINISH
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.
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Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)
"Federal Steel Cement Hardener" manufactured by Federal Steel Cement Mills, Cleveland, represented by E. A. Bullis & Co. (See advertisement, page 26.)
Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.

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Robert W. Hunt & Co., 251 Kearny St., San Francisco.

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"Kahn System," see advertisement on page 31, this issue.
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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- "Concreta" sold by W. P. Fuller & Co., San Francisco.
- Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.
- Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco.

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- Arthur W. Biggers, 112 Market St., San Francisco.
- Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
- Collman & Collman, 526 Sharon Bldg., San Francisco.
- Construction & Engineering Co., Hobart Bldg., San Francisco.
- M. Fisher, California-Pacific Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- Gaspard & Hammond, Sharon Bldg., San Francisco. (See card above.)
- Howard S. Williams, Hearst Bldg., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- Lester Stock, 12 Geary St., San Francisco.
- McLaren & Peterson, Sharon Bldg., San Francisco.
- R. W. Moller, 185 Stevenson St., San Francisco.
- John Monk, 216 Sharon Bldg., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- Ransome Concrete Co., Sacramento, Cal.
- Robert Trost, 26th and Folsom Sts., San Francisco.
- Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

CORK FLOORING
- "Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

CORNER BAR
- Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BEAD
- Capitol Sheet Metal Works, 1827 Market St,, San Francisco.
- United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, new Call Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Imperial Co., 183 Stevenson St., San Francisco.
- "Impervite," sold by E. A. Bullis & Co. (See adv. on page 26.)
- Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)
- "Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.
- Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

DOOR HANGERS
- McCabe Hanger Mfg. Co., New York, N. Y.
- Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Central Electric Co., 185 Stevenson St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

ELECTRICAL ENGINEERS
- Chas. T. Phillips, Pacific Bldg., San Francisco.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
- B. C. Van Emon Elevator Co., 235 First St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
- Elevator Supply & Repair Co., Underwood Bldg., San Francisco

MORTENSON CONSTRUCTION CO.

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FIBRESTONE & ROOFING CO., 971 Howard St. San Francisco Tel. Sutter 329

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATOR ENCLOSURES
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

ENGINEERS
F. J. Amweg, 700 Marston Bldg., San Francisco.
W. W. Breite, Clunie Bldg., San Francisco.
L. M. Hausmann, Sharon Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

EXCAVATING CONTRACTORS
Pacific Excavator Company, Hearst Bldg., San Francisco.

FIRE EXIT DEVICES
Von Duprin Self-Releasing Fire Exit Devices, Vonnegut Hardware Co. (See Adv. for Coast Agencies.)

FIRE ESCAPES
Burnett Iron Works, Fresno, Cal.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIRE BRICK
Livermore Fire Brick Co., Livermore, Cal.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
Glidden Products, sold by Whittier-Coburn Co., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. J. Forbes & Son, 1530 Filbert St., San Francisco.
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
T. H. Meek Co., 1157 Mission St., San Francisco.

FLAG POLES—TACKLE, ETC.
Pacific Foundry Company, Harrison and 18th Sts., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco.

FLOORING—MAGNESITE
Fibrestone & Roofing Co., 971 Howard St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

GAS FURNACES
Cole Gas Furnace, Fisher & Klauser, distributors, Lick Bldg., San Francisco, 1764 Broadway, Oakland.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit. Bowser & Co., 612 Howard St., San Francisco.

GARDEN FURNITURE
G. Tomagnini & Co., 219 Tenth St., San Francisco.
O. S. Sarsi, 123 Oak St., San Francisco.

GAS GENERATORS
Utility Gas Generator Co., 340 Sansome St., San Francisco.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRADING CONTRACTORS
Pacific Excavator Company, Hearst Bldg., San Francisco.

GRANITE
California Granite Co., Sharon Bldg., San Francisco.
Raymond Granite Co., Division and Potrero Sts., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Grant Gravel Co., Flatiron Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

GRAVITY CHUTES
Gravity Spiral Chutes, sold by G. E. Sturgis' Supply House, 602 Mission St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.
American Keene Cement Co., 333 Monadnock Bldg., San Francisco.
"Empire" Hardwall Plaster, Pacific Portland Cement Company, Pacific Bldg., San Francisco.

HARDWARE
Russwin Hardware, Joost Bros., San Francisco.
Pacific Hardware & Steel Company, San Francisco, Oakland, Berkeley, Los Angeles and San Diego.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
Western Brass Mfg. Co., 217 Tehama St., S. F.
Russell & Erwin Manufactnring Co., Commercial Bldg., San Francisco.

"White-Steel" Medicine Cabinets and Mirrors are the last word in Sanitary Bathroom Equipment. See Sweet's 1914 Catalog, Pages 1054-1055 or write for full information.

"WHITE-STEEL" SANITARY FURNITURE CO.
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Johnson-Locke Mercantile Co.
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Southern California
H. R. Boynton Company
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RUSSELL & ERWIN MANUFACTURING CO.

The American Hardware Corporation, Successor

New Britain, Conn. 833 Market Street, SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Hardwood Interior Co., 554 Bryant St., San Francisco.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- J. M. Boscus, 975 Howard St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Charles T. Phillips, Pacific Building, San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Oebsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

IRONING BOARDS
- Merritt Patent Ironing Board, sold by A. Hommel, agent, Atlanta Hotel, San Francisco.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
- American Keene Cement Co., Monadnock Bldg., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.
- E. K. Wood Lumber Company, East Oakland, California.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Tilden Lumber Company, foot of University Ave., Berkeley, Cal.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

MARBLE
- G. Tomagnini & Co., 219 Tenth St., San Francisco.
- Sculptors' Workshop.

MEDICINE CABINETS
- White Steel Sanitary Furniture Co., rep. by Johnson-Locke Mercantile Co., San Francisco.

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Monadnock Bldg., San Francisco.
- L. A. Norris & Co., 140 Townsend St., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

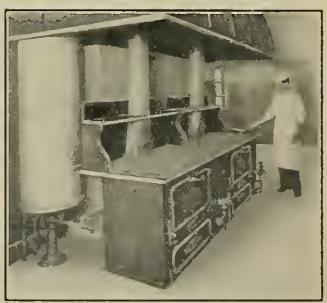
METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco; 117 Franklin St., Oakland.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco.
- Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.
- Capitol Sheet Metal Works, San Francisco and Oakland.

METAL SHINGLES
- Meurer Bros., 630 Third St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

MORTAR COLORS
- Dry Mineral Dyes, sold by E. A. Bullis & Co. (See adv., page 26.)

OIL BURNERS
- American Standard Oil Burner Co., Seventh and Cedar Sts., Oakland.
- S. T. Johnson Co. (see adv. below).
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.



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ARCHITECTS' SPECIFICATION INDEX—*Continued*

ORNAMENTAL IRON AND BRONZE
- American Art Metal Works, 13 Grace St., San Francisco.
- Brode Iron Works, 31-37 Hawthorne St., San Francisco.
- Burnett Iron Works, Fresno.
- Palm Iron & Bridge Works, Sacramento.
- California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
- Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
- D. Zelinsky, 564 Eddy St., San Francisco.
- Robert Swan, 1133 E. 12th St., Oakland.

PAINT FOR CEMENT
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Concreto Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
- "Technola," a cement paint, sold by C. Roman, San Francisco.

PAINT FOR STEEL STRUCTURES
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)

PAINTS, OILS, ETC.
- Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco.
- Whittier-Coburn Co., Howard and Beale Sts., San Francisco.
- W. P. Fuller & Co., all principal Coast cities.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
- California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
- California Photo Engraving Co., 121 Second St., San Francisco.

PHOTOGRAPHY
- R. J. Waters Co., 717 Market St., San Francisco.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, 985 Folsom St., San Francisco.
- C. C. Morehouse, Crocker Bldg., San Francisco.
- J. J. Connolly & Son, Builders' Exchange, San Francisco.

PLUMBERS' MARBLE HARDWARE
- Western Brass Mfg. Co., 217 Tehama St., S. F.

PLUMBING
- Boscus Bros., 975 Howard St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco

PLUMBING FIXTURES, MATERIALS, ETC.
- Crane Co., Second and Brannan Sts., San Francisco.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
- Glauber Brass Manufacturing Company, 1107 Mission St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PUMPS
- Chicago Pump Company, 612 Howard street, San Francisco.

REFRIGERATORS
- McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
- Vulcan Iron Works, San Francisco.

REVERSIBLE WINDOWS
- Hauser Reversible Window Company, Balboa Bldg., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

REVOLVING DOORS
Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Pacific Building Materials Co., 523 Market St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco.
Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
Grant Gravel Co., Flat Iron Bldg., San Francisco.
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
National Roofing Company, Plaza Bldg., Oakland.
"Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
Mackenzie Roof Co., 425 15th St., Oakland.
United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
M. G. West Co., 353 Market St., San Francisco.

SANITARY DRINKING FOUNTAINS
N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.

SANITARY BATH FIXTURE
"Boudoir" bath tub, mfrd. by Improved Sanitary Fixture Co., 411 S. Los Angeles St., Los Angeles. Sold by all plumbing houses.

SANITARY KITCHEN SINK
Improved Sanitary Fixture Company, 411 S. Los Angeles St., Los Angeles.

SASH CORD
Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines. 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.
A. H. Andrews & Co., 728 Mission St., San Francisco.

SEWAGE EJECTORS
Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK, SKYLIGHTS, ETC.
Capitol Sheet Metal Works, 1927 Market St., San Francisco.
U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

STEEL AND IRON—STRUCTURAL
Burnett Iron Works, Fresno, Cal.
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Brode Iron Works, 31 Hawthorne St., San Francisco.
Judson Manufacturing Co., 819 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, agents, 135 Kearny St., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J. 3435, 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, Twentieth and Indiana Sts., San Francisco.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.
Woods & Huddart, 444 Market St., San Francisco.

STEEL PRESERVATIVES
Biturine Company of America, 24 California St., San Francisco.
Wadsworth, Howland & Co., Boston Mass. (See Adv. for Coast agencies.)

STEEL BARS FOR CONCRETE
Kahn and Rib Bars, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Woods & Huddart, 444 Market St., San Francisco.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

STEEL FIREPROOF WINDOWS
United States Metal Products Co., San Francisco and Los Angeles.

STEEL STUDDING
Collins Steel Partition. Parrott & Co., San Francisco and Los Angeles.

CALIFORNIA ARTISTIC METAL & WIRE CO.
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ORNAMENTAL IRON & BRONZE WORK
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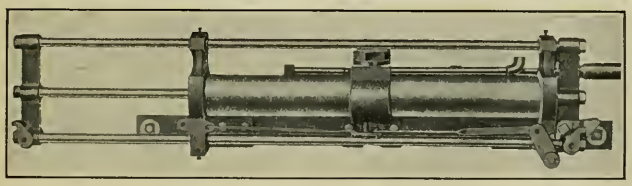

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., W. W. Thurston, Rialto Bldg., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STONE
California Granite Co., 518 Sharon Bldg., San Francisco.
Boise Sandstone Co., Boise, Idaho.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
Colusa Sandstone Co., Potrero Ave. and Division St., San Francisco.

STORAGE SYSTEMS
S. F. Bowser & Co., 612 Howard St., San Francisco.

SURETY BONDS
Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
J. B. Nanders & Sons, Kohl Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland, Mills Bldg., San Francisco.
Pacific Coast Casualty Co., Merchants' Exchange Bldg., San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.

TELEPHONE EQUIPMENT
Telephone Electric Equipment Co., 612 Howard St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 561 Mission St., San Francisco.

TILE FOR ROOFING
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Denison Hollow Interlocking Blocks, Ochsner Bldg., Sacramento.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
Western States Porcelain Co., Richmond, Cal.

VACUUM CLEANERS
Giant Stationary Suction Cleaner, manufactured by Giant Suction Cleaner Co., 731 Folsom St., San Francisco and Third and Jefferson Sts., Oakland.
Invincible Vacuum Cleaner, R. W. Foyle, Agent, San Francisco.
"Tuec" Air Cleaner, manufactured by United Electric Co., 110 Jessie St., San Francisco.
B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.

VALVES
Jenkins Bros., 247 Mission St., San Francisco.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
Glidden Varnish Co., Cleveland, O., represented on the Pacific Coast by Whittier-Coburn Co., San Francisco.
Standard Varnish Works, 113 Front St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
Moller & Schumann Co., Hilo Varnishes, 1022-24 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 365 Market St., San Francisco.

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Pittsburg Water Heater Co. of California, 237 Powell St., San Francisco, and Thirteenth and Clay Sts., Oakland.

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Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

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Bishopric Wall Board sold by I. E. Thayer & Co., San Francisco, and Central Door & Lumber Co., Portland, Oregon.

WALL SAFES
Lowrie Wall Safe, sold by C. Roman Co., 173 Jessie St., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
"Impervite," sold by E. A. Bullis & Co. (See adv. on page 26.)
Concreto Cement Coating, manufactured by the Muralo Co. (See page 124.)
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Glidden's Concrete Floor Dressing and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
Imperial Co., 183 Stevenson St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Wadsworth, Howland & Co., Inc. (See Adv. for Coast agencies.)

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL FINISH
"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Satinette," Standard Varnish Works, 113 Front St., San Francisco.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Co. (See Adv. for Coast distributors.

WINDOWS—REVERSIBLE, ETC.
Perfection Reversible Window Co., 2025 Market St., San Francisco.
Whitney Adjustable Window Co., San Francisco. (See page 25.)
Hauser Reversible Window Co., Balboa Bldg., San Francisco.

WINDOW SHADES
Top Light Shade Co., 737 Market St., Oakland.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
L. A. Norris Co., 140 Townsend St., San Francisco.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 561 Mission St., San Francisco.

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THE ROUGH TEXTURE BRICK OF SURPASSING BEAUTY

This panel and other artistic creations displayed at our exhibit in
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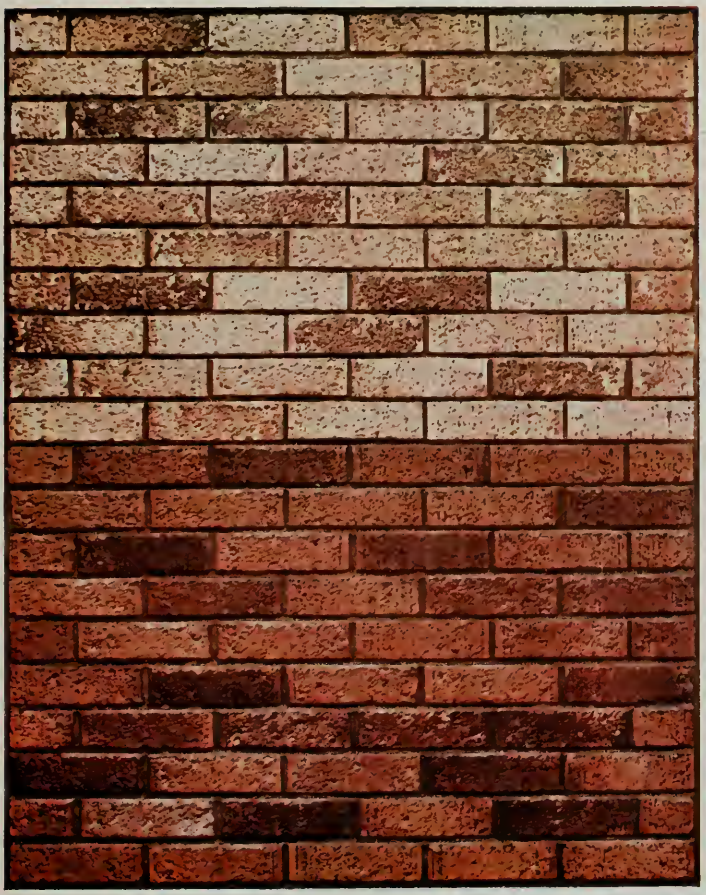

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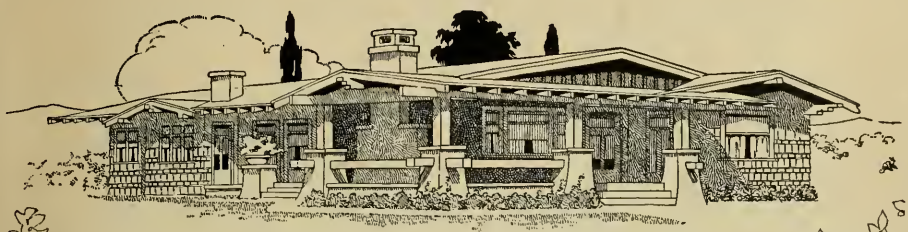

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A roof or a shingled house will stand exposure for years if a *good* shingle stain has been applied.

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First of all, it is the best stain for redwood and other lumber grown on this coast.

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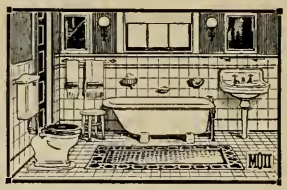

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can be adjusted to *let in* light and air, yet *keep out* the sun and the gaze of outsiders. They make your sunny rooms cool and restful; your porch a shady, airy and secluded haven of comfort.
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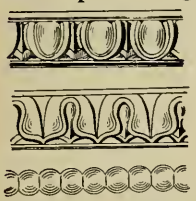

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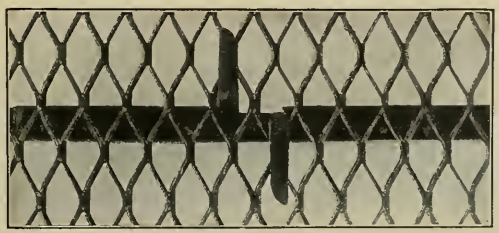

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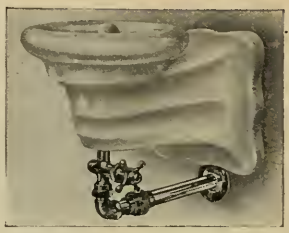

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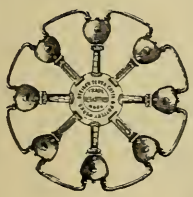

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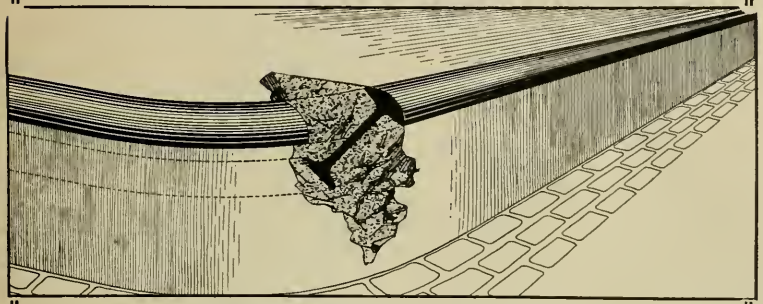

SECTIONAL VIEW OF DOLBEAR CURB BAR IN CONCRETE

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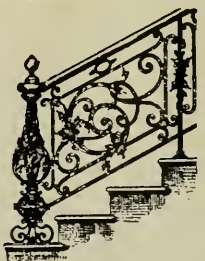

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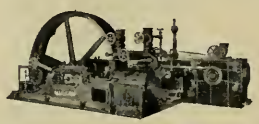

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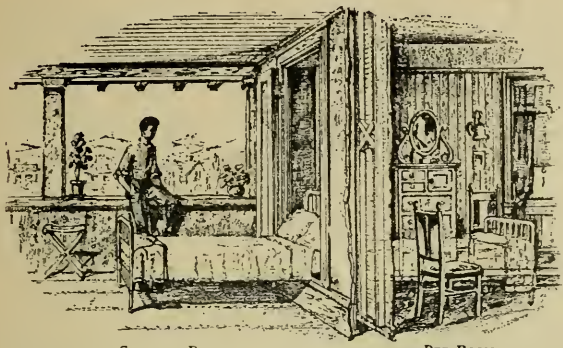

Isometric view of the **Oscillating Portal Wall Bed** showing how the same bed may be used, at will, either on the sleeping porch or in the room.

SLEEPING PORCH BED ROOM

MARSHALL & STEARNS CO.,

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Phone Market 134

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New York
John J. Donovan, Supervising Architect
G. F. Ashley, Superintendent

Imperial Waterproofing was used in the cement plaster and floor topping of basement, by the Roebling Construction Co.

Note.—Also in three of the buildings shown in the surrounding group the material has been used.

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WATER PROOFING PROBLEMS

Above Ground — Under Ground

ASSUME ALL RESPONSIBILITY
GUARANTEE RESULTS

IMPERIAL COMPANY

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STANDARDIZED PRODUCTS

High class and satisfactory for interior and exterior decorating of hotels, office buildings, hospitals, churches and homes. Specify Standardized Products, and win satisfaction for yourself and your clients.

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Put Eternal Beauty Into Your Concrete

ARCHITECTS who seek to reproduce the beauty of ancient Grecian architecture will appreciate the value of

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Brick and Cement Coating

This coating not only waterproofs concrete and stucco walls, but it equalizes the color. Overcomes the the blotched effect of rain. Gives an artistic dull surface, but doesn't mar the texture of the concrete or stucco.

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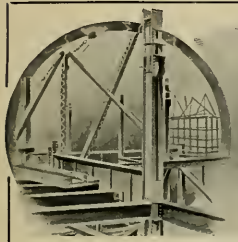

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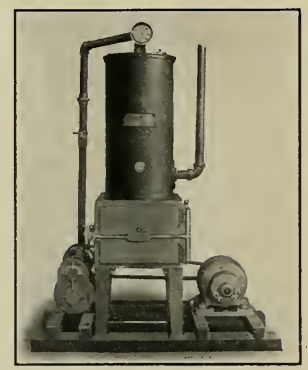

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SANTA FE RAILROAD STATION
SAN DIEGO, CALIFORNIA
BAKEWELL & BROWN, ARCHITECTS

Frontispiece
The Architect and Engineer
of California
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VOL. XLI. APRIL, 1915 No. 1.

The Santa Fe Station, San Diego

By JOHN BAKEWELL, JR.

THE new Santa Fe railroad station at San Diego is an adaptation of Spanish Colonial architecture to the commercial requirements of a railway station. As one of the principal characteristics of this style are its large masses of masonry and its comparatively small windows, it was a somewhat difficult problem to adapt it to the requirements of a depot, which, of course, must be well lighted, and of a form of construction that must be comparatively inexpensive.

The plan adopted by the railroad company of an open-air waiting room or patio, and a long covered concourse uniting the different elements of the station, simplified the problem very materially, and made it possible to follow this style of architecture.

The station is decidedly not an archaeological replica of one of the old missions. In its design an honest attempt has been made to build a building that appears to be what it is, a railway station, and yet which has the characteristics of the early California architecture; in other words, it was the aim of the architects to design a station as one of the Franciscan Fathers would have designed it had railway stations been built in his day.

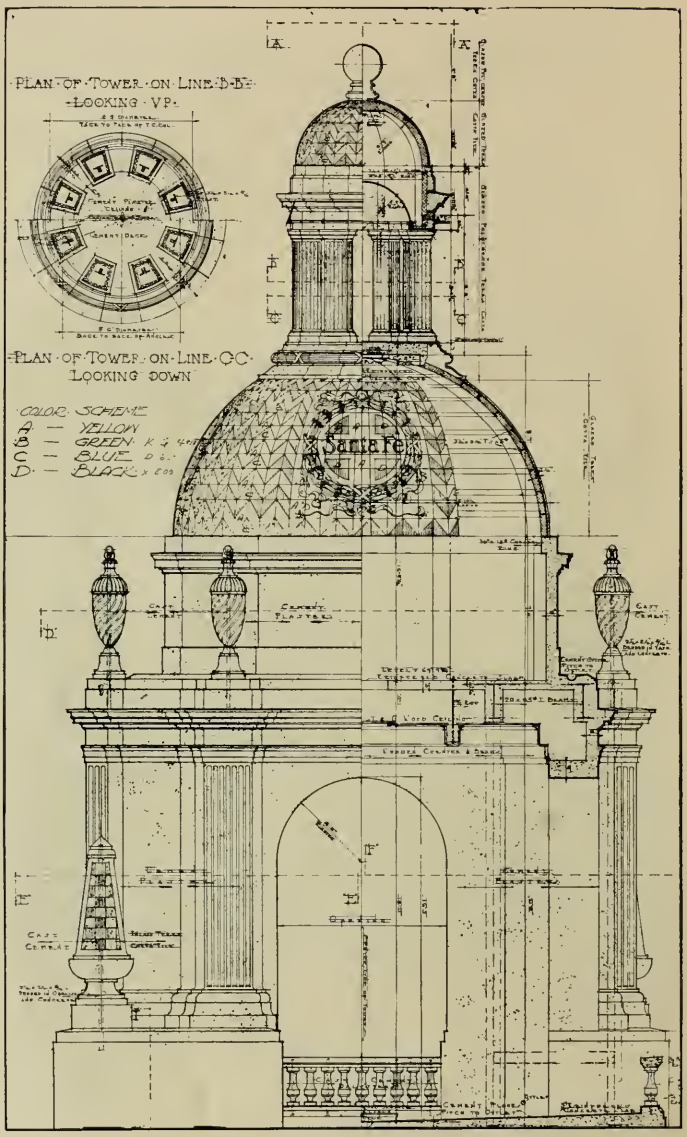
The main approach to the station is from Broadway through the patio or open-air waiting room. This has been made the principal front of the building although at one end. At the end of the patio, which thus becomes a sort of fore court, is a large arch below which are the main entrance doors to the general waiting room. On the track side of this waiting room are the ticket offices, the news stands, etc., which are open to both concourse and waiting room. On the other side are the retiring rooms, toilets, and stairs to the railway offices which are on the second floor. There is also a carriage entrance on this side.

At the extreme end of the waiting room is the Harvey lunch room, which, with its dependencies, terminates the passenger portion of the station.

On the tracks is the covered concourse, which consists of an arcade six hundred and fifty feet long and twenty-seven feet wide and connecting the passenger station with the baggage and express departments. This, with the patio and the two towers flanking the arch at the entrance to the waiting room form the principal architectural features of the exterior.

Perhaps the most interesting feature of the station, apart from the general architectural design, is the use of color.

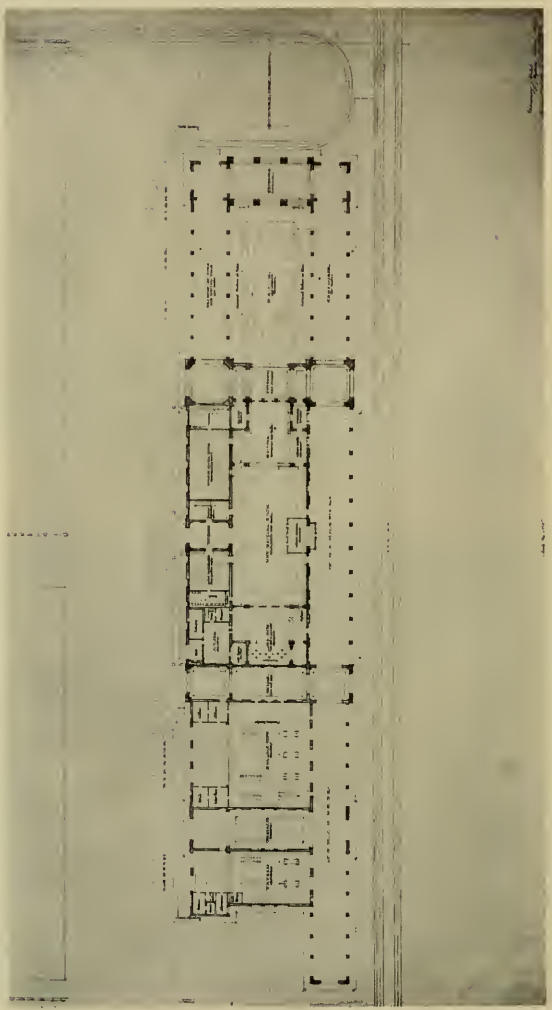
The domes of towers are of the zigzag pattern in blue and yellow tile. This is an old Spanish design, which is also used in the San Diego Exposition domes. The cross, which is the symbol of the Santa Fe system, has been worked into this design.



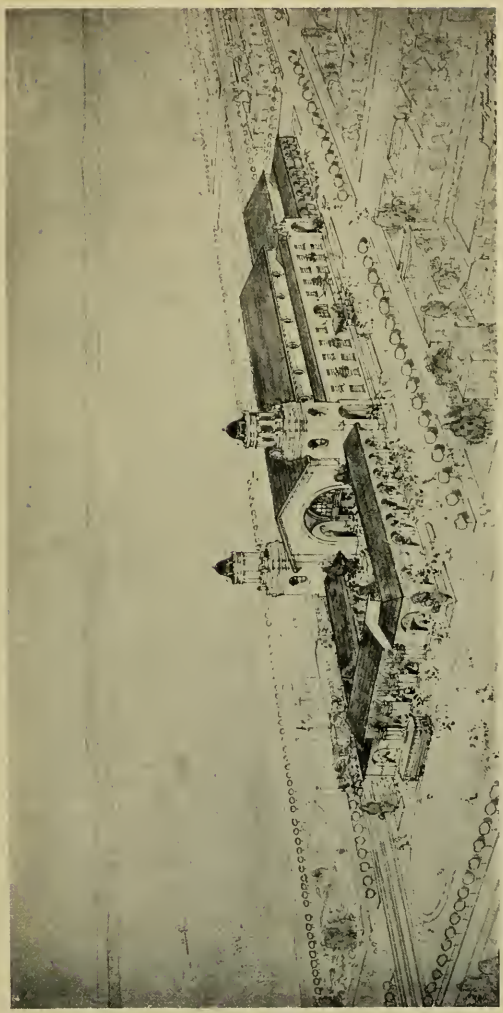
PLAN OF TOWER, SANTA FE STATION, SAN DIEGO

MAIN WAITING ROOM, SANTA FE STATION, SAN DIEGO, CALIFORNIA

MAIN WAITING ROOM, SANTA FE STATION, SAN DIEGO, CALIFORNIA
Bakewell & Brown, Architects



FLOOR PLAN, SANTA FE STATION, SAN DIEGO
BAKEWELL & BROWN, ARCHITECTS



AEROPLANE VIEW OF SANTA FE STATION
BAKEWELL & BROWN, ARCHITECTS

PRELIMINARY STUDY OF TOWER, SANTA FE STATION
BAKEWELL & BROWN, ARCHITECTS

SANTA FE RAILWAY STATION, SAN DIEGO, CALIFORNIA
BAKEWELL & BROWN, ARCHITECTS

TILE WAINSCOT, MAIN WAITING ROOM, SANTA FE STATION

On the interior of the large waiting room and lunch room a tiled wainscot of Moorish design has been used. This tile is made of five different colors, and the appearance is remarkably good, giving the effect of a Turkish rug. The use of this colored tile will be of special interest to architects and decorators, as the different effects that may be obtained from it are very remarkable.

Mr. Nordhoff, who produces this tile, is quick to see the possibilities of designs, and the palette which he has perfected is surprisingly complete. He has established in San Diego the beginning of an artistic craft which does not rely on subtlety or tameness for its success, and it is indeed refreshing to see how by combinations of the boldest and brightest colors he succeeds in obtaining soft and pleasing results.

HARVEY DINING ROOM, SANTA FE STATION, SAN DIEGO
Bakewell & Brown, Architects

Coming Convention of Architectural League

THE Architectural League of the Pacific Coast will hold its annual convention in Hall F, Municipal Auditorium, San Francisco, June 7th, 8th and 9th. Every effort is being made to make this one of the most successful conventions yet held by this organization. As an additional attraction for out-of-town delegates, the San Francisco Architectural Club will hold an architectural exhibition, probably in the same building. The program for the convention is being arranged by the president of the League, Chas. Peter Weeks, of San Francisco, and a list of the speakers and the subjects to be discussed will be given in the May number of this magazine. The following executive council has been appointed:

Southern California Chapter, A. I. A.—John T. Vawter, Los Angeles.
Washington Chapter, A. I. A.—Carl F. Gould, Seattle.
Oregon State Chapter, A. I. A.—M. A. Whitehouse, Portland.
San Francisco Architectural Club—T. Bearwald, San Francisco.
San Francisco Society of Architects—Warren C. Perry, San Francisco.
Civic Architectural League of Sacramento—R. A. Herold, Sacramento.
University of California, Architectural Dept.—Thomas E. Pring.

Wm. H. Crim, Jr., is chairman of the Entertainment Committee of the convention and August G. Headman is secretary-treasurer.

* * *

Monument for San Jose

Plans have been prepared in the office of Architect Paul P. Crept, Philadelphia, for the Neglee Memorial Monument to be erected in San Jose at a cost of $30,000, and Architect August G. Headman of San Francisco has been appointed resident architect. The monument will be of concrete, marble, stone and bronze.

The Durability of Creosoted Piling*

REMARKABLY short life is attributed to untreated Douglas fir piles in San Francisco and southern California ports, about two and one-half years being considered by some engineers the longest that should be expected. Other engineers who have had more satisfactory experience with the untreated piles place its probable average life in service, other than in fender lines, at from four to six years. It is significant that 100 per cent of all the untreated piles driven since 1906 by one railroad company in four Pacific Coast ports had to be replaced within seven years. It is, therefore, generally agreed that some form of treatment is necessary if wooden piles are to be used in the more permanent structures; and, after considerable experiment, treatment with creosote has come to be the only method now used extensively on the Pacific Coast.

The question as to whether it is economical to continue treating piles, now that creosote costs 10.04 cents, as against 7¼ cents per gallon in 1912, was recently sent from the manager's office to the engineering department of a large company. The engineer showed in reply that a 1-cent increase in the price per gallon of creosote would increase the cost of the treated piles 1 cent per linear foot, and that, taking the life of untreated piles at eight years and creosoted piles at thirty years, it would be economical to treat piles until the cost of treatment reached 32 cents per linear foot, which corresponds to a creosote cost of 22 cents per gallon. These figures are based on a cost for untreated Douglas fir piles of 10 cents per foot, as against 30 cents for creosoted piles. Assuming $6 for driving in each case, a 40-foot untreated pile in place would be worth $10 and a treated pile of equal length in place would cost $18.

The life of a treated pile will be determined largely by the condition of its outer surface after it is driven. Mechanical injuries, such as result from hooks, spikes or hammer blows, are to be carefully avoided, but even more serious than these is the checking that may result from treatment or that may develop in driving. In addition to the weakening and the exposure to the teredo due to checking, a new danger was discovered recently in Wilmington harbor. In this case piles which had checked considerably were found to be fairly sound on the surface, but within had been cut into "lacework" by borers much smaller than the teredo. Sections of these piles were submitted to experts to determine whether some hitherto unknown marine borer had attacked them, but careful examination showed the borers to be the common limnoria, which had abandoned its usual method of cutting around the exterior and had gone inside through cracks in the otherwise well-protected surface.

On the other hand, an instance of exceptionally good surface protection is found in the long wharf at Santa Monica. Piles in this structure were treated and driven in 1892 and at present the outer end of the wharf is no longer in use and is being removed by breaking the piles off at the ground line, about 55 feet below the surface. After twenty-two years of service most of the piles removed are being sharpened and redriven in the repair of bents beneath an electric railway track, and the foreman of the redriving crew reports them less liable to break under the hammer than freshly treated piles.

*By N. A. Bowers in the Engineering Record.

Total Annual Charge Against Creosoted Pile Piers

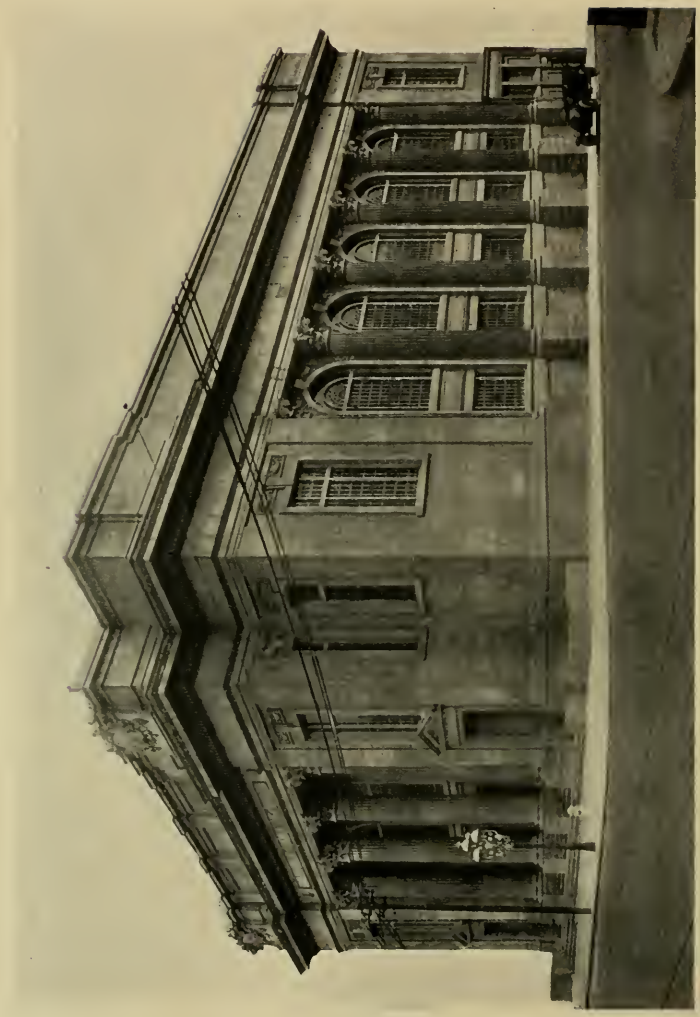
Interest charges at 4 per cent	$0.0400
Annual maintenance	.0500
Replacement fund, 20 years	.0336
Redemption fund, 75 years	.0022
Insurance	.0060
Total annual charges per square foot	$0.1318

The specifications for creosote approved by the American Railway Engineering Association are accepted as standard. Some form of boiling process is now used almost exclusively in the treatment. The boiling process was developed in 1892 by John D. Isaacs for the Southern Pacific Company, which treats a large percentage of the piles used in central and southern California. The process became generally known, and at present five of the six timber-treating plants in Oregon and Washington employ it.

In this process, which was designed primarily for treating Douglas fir, the artificial seasoning by boiling in oil is said to weaken the timber much less than the steaming process. After the piles are run into the treating cylinder on trucks, creosote at a temperature of 160 degrees Fahrenheit is introduced until the piles are covered and there is a space of 10 inches between the surface of the oil and the top of the retort. Steam is then admitted to coils in the cylinder and the temperature of the oil is raised to 220 degrees. The amount of steam is then regulated so as to maintain the temperature between 220 and 225 degrees until such time as the amount of condensation collected from the treating cylinder has decreased to one-eighth pound of water per cubic foot of timber per hour. After this the treating cylinder is filled with creosote at a temperature of 180 degrees and a pressure of 5 pounds per square inch is developed. Connection is then made with a measuring tank from which oil is pumped into the cylinder until an amount equal to 10 pounds for each cubic foot of timber has been injected.

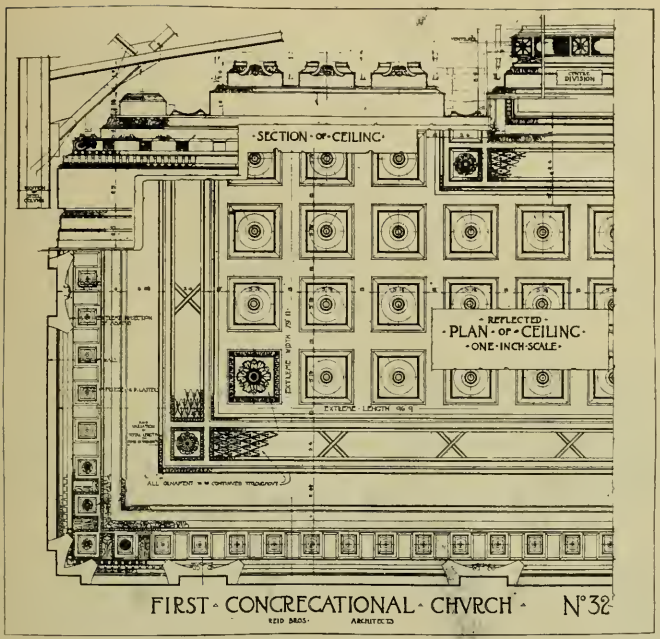
Creosoted pile piers of the construction standard approved for the port of San Francisco by the Board of State Harbor Commissioners are usually estimated at $1 per square foot of completed pier, exclusive of bulkhead wall and sheds. This allows a margin for fluctuating prices of materials, as is shown by the fact that contracts for two piers have recently been let on a basis of 84 and 81.4 cents per square foot. On the basis of a cost of $1 per square foot the maintenance estimate in the accompanying table was submitted to the San Francisco Chamber of Commerce by a committee of three engineers appointed to investigate dock costs and governing conditions at the port of San Francisco.

It is apparent, therefore, that aside from any comparisons with concrete construction, creosoted piles can be expected to give satisfactory service under Pacific Coast conditions. Moreover, sufficient time has, probably, not elapsed to allow final judgment to be passed in the controversy between timber and concrete under these conditions, for, as above noted, piles which have been removed were giving good service after twenty-two years of use, while others are still in good condition after a period of twenty-four years.



FIRST CONGREGATIONAL CHURCH, SAN FRANCISCO
REID BROS., ARCHITECTS

Golden Gate cement used.



PLAN OF CEILING, FIRST CONGREGATIONAL CHURCH, SAN FRANCISCO
Reid Bros., Architects

The First Congregational Church, San Francisco

IN the First Congregational church, recently completed at Post and Mason streets, San Francisco, the architects, Messrs. Reid Bros., have departed from the usual run of ecclesiastical architecture by adopting a design in the Italian Renaissance, with an elevation equal to the average two-story building and the familiar Gothic tower entirely eliminated. The color scheme throughout is a warm gray stone tone.

The dominating feature of the Post street front is a center Corinthian colonnade set between pavilions, and the same treatment in a modified form is carried out on the Mason street and eastern facades.

The main approach is from Post street, the steps extending across the entire front and leading through five doorways to a foyer about 20 feet by 80 feet long. This foyer is not yet completed as, owing to the generosity of a member of the church, a special sum was contributed for its enrichment. When finished the double length of 80 feet will be broken by columns and pilasters, and the entrances to the staircases at either end will be ornamented in the same way.

The Verde Antique and white marble which enters largely into the construction of the foyer is carried in the staircases which lead to the balcony and also to the Sunday school room in the basement.

INTERIOR, FIRST CONGREGATIONAL CHURCH, SAN FRANCISCO
Reid Bros., Architects

From the foyer five doorways lead to the auditorium, which is 80 feet deep by 90 feet in width, and with the balcony, has a seating capacity of fifteen hundred.

The walls of the auditorium are enriched by pilasters, the ceiling heavily paneled, and about two thirds of the area is occupied by a skylight of art glass, which affords illumination by day and by means of lamps set above it is the principal source of artificial illumination.

The chancel is outlined by groups of Corinthian pilasters surrounded by heavy entablature, finished as a large niche, receiving the pulpit platform, and slightly thereabove at the back, a choir space is provided for forty singers.

As the floor of the auditorium is inclined like a theater the view of the pulpit platform and all parts of the house is equally good. This is also true of the balcony, which extends around three sides of the auditorium.

To the left of the choir are sitting rooms, dressing rooms and library for the singers; to the right is the minister's study and other rooms connected with the operation of the organization.

In the mazzanine basement are the ladies' parlor, about 20 by 60 feet, with dressing rooms, buffet and all required accessories; Sunday School room, 60 by 100 feet; dining room, kitchen, kindergarten and other necessary adjuncts.

A sub-basement is provided for the heating and mechanical equipment.

* * *

The Merritt Building, Los Angeles

THIS office building, designed by Architects Reid Bros of San Francisco, is located at the northwest corner of Broadway and Eighth streets, Los Angeles, and its most striking feature will be two street frontages finished entirely in white marble. The building, which is under construction, will be nine stories and is designed in the classical style.

The office entrance is on Eighth street, protected by a richly ornamented bronze marquise, the same ornamentation but somewhat less elaborate, being extended along the entire frontages on Eighth street and Broadway.

From the office entrance or foyer, staircases lead to the basement, which is 16 feet high, and to the upper stories. The latter are served in the usual way by a battery of elevators, and a staircase of rather more than the usual breadth and proportions.

The ninth floor is to be fitted up exclusively for the use of Mr. H. C. Merritt, the owner, and will, perhaps, be the most completely and elaborately equipped office in the country. It is the intention that everything that can contribute to the comfort and convenience of the occupants will be provided, and this is also true of every story in the building.

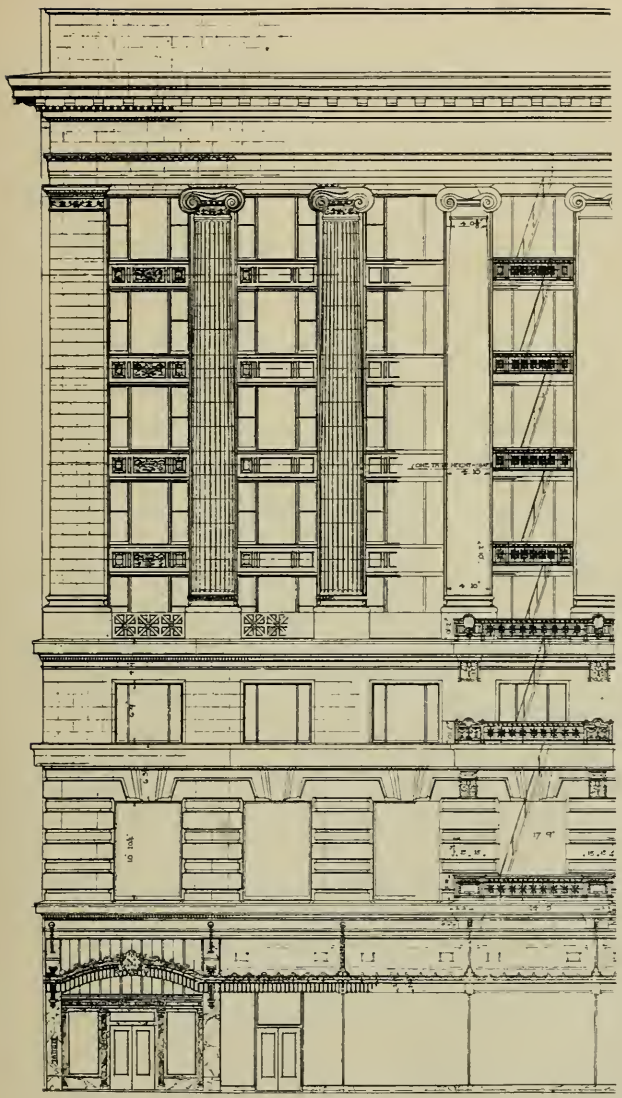
White golden vein marble wainscoting with Verde Antique base is provided for all corridors to the full height of walls. This same Verde Antique marble furnishes a base around all the offices throughout. The floor of the offices as well as corridors and all other parts of building are of white marble tile.

All metal work showing is of statuary bronze, while the wood finish is mahogany. Cornices enrich the offices and corridors throughout the building. Mechanical ventilation is provided.

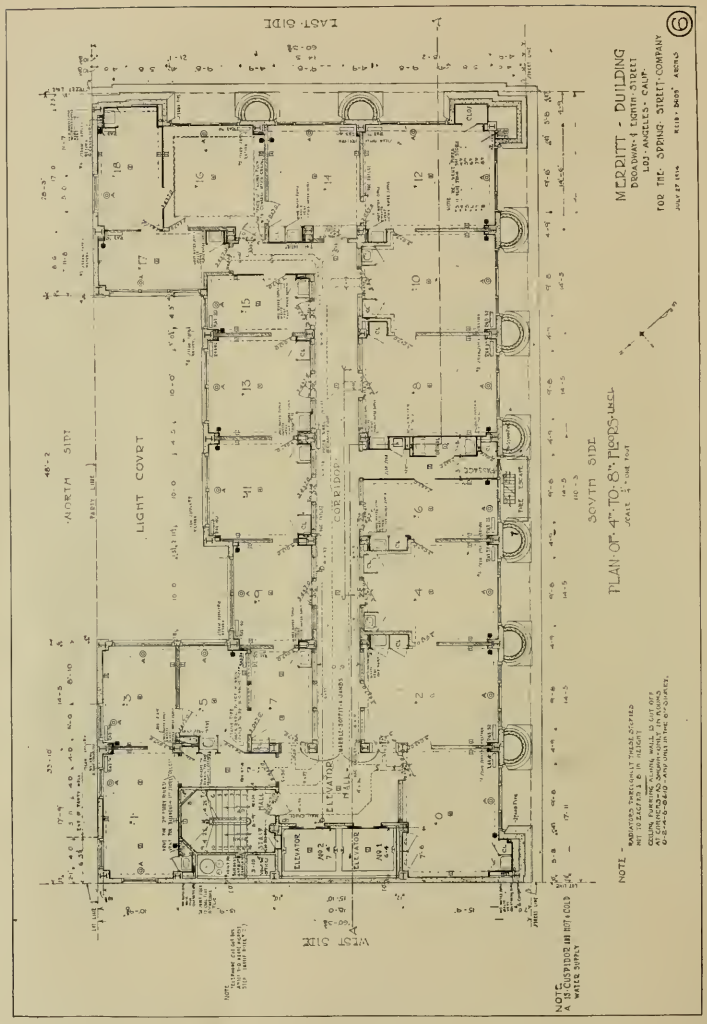
In the first story there are less than the usual number of columns with a view to the convenient arrangement of whatever equipment may be required for the occupants of that story.

MERRITT BUILDING, LOS ANGELES
REID BROS., ARCHITECTS

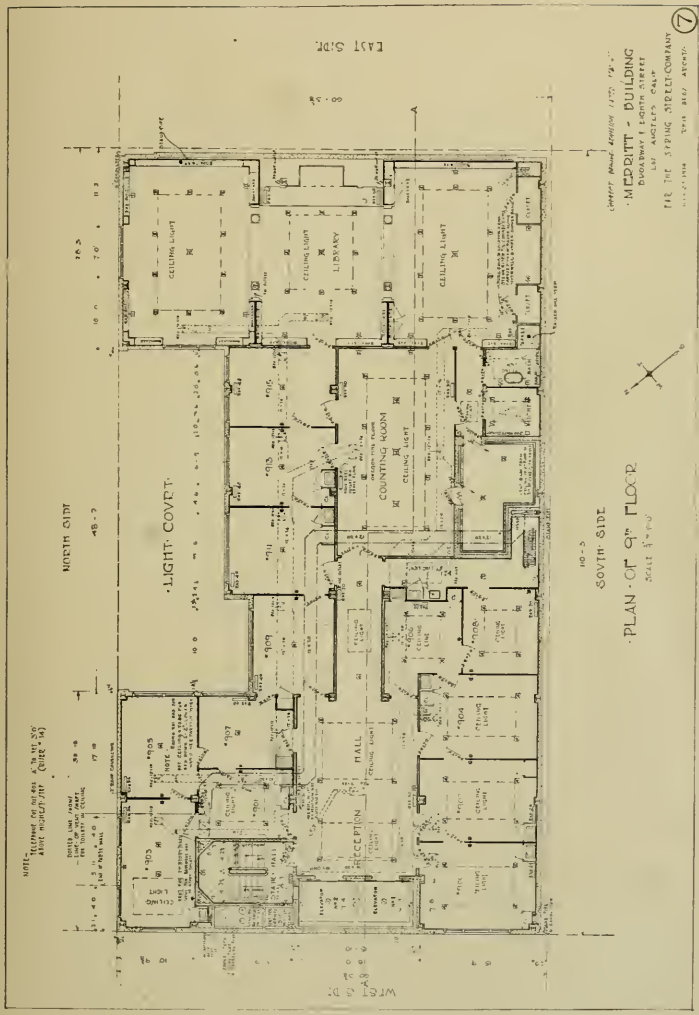
The entire front of this building will be of Colorado-Yule white marble.



ELEVATION, MERRITT BUILDING, LOS ANGELES
REID BROS., ARCHITECTS



TYPICAL FLOOR PLAN, MERRITT BUILDING, LOS ANGELES



PLAN OF TOP FLOOR, MERRITT BUILDING, LOS ANGELES

Concrete: A Medium of Aesthetic Expression*

By IRVING K. POND, F. A. I. A., Chicago

AT the forty-first convention of the American Institute of Architects, held in November, 1907, I reported, as chairman of the then existing committee on Applied Arts and Sciences, upon the possibility of concrete in the field of architectural expression. Much of the matter, which I then formulated with the assistance and approval of the other members of the committee, is altogether applicable to the subject today. The introductory sentence was as follows: "Although the exact relationship existing between concrete and steel reinforcement under a given condition is yet to be accurately determined, and the structural use of reinforced concrete is yet to be reduced to an exact science, and although the manipulation of concrete and its application to structural uses has not as yet become an art, yet the fact that in its use and treatment there are immense scientific and aesthetic possibilities brings the subject of reinforced concrete well within the field of study of this committee, especially at this time when the general topics of steel structure and concrete reinforcement are before the Institute for discussion." The science during the years which have elapsed since that was written has possibly become a bit more exact, engineers have been at work — many formulae have been developed, many tables have been compiled, and much has been gained in the way of practical experience. This practical experience has been of benefit in developing the art of manipulation, for Art consists in "doing"; but the art of design seems not to have kept pace. It is to stimulate that art, and to awaken in the architect a realizing sense of his opportunities and responsibilities that I then entered into the discussion and now continue it. It is essential throughout such discussion to keep clearly in mind the true abiding status of architecture and the architect. The architect is not a mechanical fabricator of mathematical diagrams. His highest concern is with the ideal, and his first sketch should present an idea, an idea which is conceived in beauty. The past has demonstrated that architecture as the expression of the ideal can materialize in but one or the other of two great manners: that of the articulated structure, unit added to unit, and that of the plastic mass. The most noble development in the first manner is in the architecture of masonry (brick or stone), and this development has reached its logical limit; in no way except, may be, in mere size, its least noble attribute, is it to be excelled. Under the vital art of this first manner lay an intuitive science; under the too transient beauty of the work of the second great manner lay nothing of science at all, and so this architecture has well-nigh vanished except as some adherence to the principles of the first manner has interposed to save. And now comes the ghost of what might have been and calls for an incarnation, feeling (if a ghost can feel) that in reinforced concrete science is preparing a body which can be vivified with the spirit of art. If this feeling is substantiated, to the architect is opened up a new range of possibilities. The architect becomes in a sense a sculptor, a moulder of monumental mass, not the fantastic figure, who, at first, with sharply insistent blows, and then with infinite persuasive tappings, releases the form imprisoned in the block, but a creative constructor who builds up his ideal and shapes it by the irresistible, though tender, moulding of mass and form. In this the architect assumes no new function, but develops that feeling which by nature and of necessity inheres in the architectural mind. The vital difference between the sculptor and the architect is that the former is bound by no necessity for expression in structural terms; mass and form

* Paper presented at the Annual Meeting of the American Concrete Institute.

being enough for him; while the architect, if he really is to be an architect, must have structural laws ever in mind, and must make his work an interpretation of these laws and a symbol of their aesthetic value in the expression of the higher ideals of his race and time. The architect as well as the sculptor revels in this feeling of mass taking form under his skillful manipulation; and the feeling for plasticity and for mass in flux is potent in the true architect, even though he be designing in the most refractory medium a masonry-clad steel skeleton. In most of his work the architect has to content himself with an intellectual substitute for real feeling, and his conscious delight is rather intellectual than emotional as the idea takes form in the sketch and in preliminary plan and elevation. His fingers may itch, they do itch, to feel the flow of the mass, but the feeling remains abstract and intellectual. Therefore certain architects, if not indeed the architectural body-general, are viewing with keen interest, when not actively aiding, the development of the possibilities of this fairly new and altogether plastic medium, reinforced concrete; a medium which really does flow and is moulded, and through which the form appears in gracefully unfolding stages, till the final mass stands revealed, a veritable unit. One cannot in thought connect with this materialization the shock of unloading beams, the rattling musketry of riveting, the petty and fussy application of fireproofing and surface coating. In fancy, as almost in fact, the architect sees the flowing mass take form under his own hands.

Though the use of concrete goes back into antiquity, plastic architecture would seem to be in the veriest infancy, and would seem also to be asking the genius of this age to give it perfect expression and make it worthy to stand with the architecture of the past and the yet-to-come. Though the past be examined for precedent, little will be found. Rome used concrete in bulk—but undeniable evidence of a scientific use of the material is wanting. Rome applied superficially the arts of other times and countries, but of itself left to posterity only monuments expressive of a highly temperamental force, breathing little or nothing of spirituality. Persia covered with stucco or veneered with beautiful tiles her masses of crude masonry. The Arabians and the Moors expressed their emotionalism in a plastic architecture decorated with a skim coat of ornamental plaster or an incrustation of tile, intricate in pattern and beautiful in color. The concrete of the mass was but mud, and the science of building was unknown. In such material beautiful day dreams were realized only to crumble when the spell was past. The Spanish missions were built with rare feeling for mass and light and shade; but feeling swayed and science did not guide. With the science of to-day to guide and the art experience of the past to illumine, into what logical, noble and beautiful forms should not concrete shape itself, to the end of an enduring, spiritualized architecture.

The possibilities, even the aesthetic possibilities within the range of reinforced concrete construction can hardly be over-estimated. Little beyond the introductory chapter has been written in the history of reinforced concrete, and every advance in the science of its manufacture and use will signal an advance along the line of artistic application.

Except in well-defined types, designed to serve certain well-defined uses, it is impracticable so to carry masonry construction beyond and behind the facade as to result in a homogeneous structure—wanting which architecture becomes but a hollow sound. The architecture of a reinforced plastic material may, and logically will, express itself throughout the entire structure to the remotest core. The unity, the truth, the harmony of the whole may in every part be manifested. Therefore, again, the possibilities inherent in concrete present themselves alluringly to the architect to whom the art means as much as does the science of building.

The architectural brain is not so congested by the weight of pregnant thought that at a blow a Minerva shall issue forth full fledged and full armed. That is not the history of the evolution of an architectural style. It will take time and struggle, and developed artistic perceptions in this, as in former cases, to reveal the possibilities of beautiful and of monumental design.

It may well be conceived that a moulded architecture, so to speak, an architecture of flowing and harmoniously interrelated masses, may not appeal immediately to the architect who has been taught that his art consists in naively piling up child's building-blocks on a large scale. Whatever may be urged against the deadly dulling practice of following the line of least resistance in architecture, certain it is that a material in which it is easier, as well as more logical, to fashion new and appropriate forms than to follow cut and dried conventions can not be regarded as other than a vivifying factor in a possible architectural development, and its advent hailed with delight. When architects relieve themselves of the notion that monumental architecture, for example, consists solely in a row of classical columns superimposed upon a basement, it will be a wholesome day for the art they profess to practice. Probably ignorance, inability and self-distrust in the architectural ranks will remove to some more or less remote future the development of a monumental architecture expressing itself in new forms fashioned in new materials. Yet it is possible that, in this, as in other ages, commercialism, itself so devoid of aesthetic tendencies, will pave the way to the realization of an aesthetic ideal. A material which holds in itself the qualifications for commercial use will in that very use reveal its aesthetic possibilities. No material which puts into the hand of the architect power to produce permanent mass and form, and add the enrichment of light and shade, color and texture, will long be ignored when science has made its use commercially possible. It would, then seemingly remain only for science to demonstrate the practical value of reinforced concrete, in respect to its physical properties, and art must unfold whatever it holds of beauty.

The steel skeleton developed from commercial necessity, and to clothe and protect that skeleton, the architect, naturally, used whatever means lay at his command; stone, brick, terra-cotta, and metal were called into requisition. To clothe the skeleton in one or another or all of these materials became a fixed habit with the architect. So that when concrete came into use, not only was it ignored as a possible clothing for steel, but when the skeleton of reinforced concrete was set up it was itself clothed after the existing fashion for steel. Such is the fatal force of habit! Granting to concrete the qualities ascribed to it, that it is fireproof, that it may be rendered moisture-proof, that once in place it is not affected by atmospheric and climatic conditions, that it can be permanently colored, can be moulded and chiselled, that it can be formed in place and need not be applied piecemeal—what better material could be sought for clothing the steel skeleton —and why the need of any cloak at all to such material when it has been treated with any manner of decency or respect by the designer? So aesthetically there would seem to be unlimited possibilities in reinforced concrete.

It is not inconceivable that ornamental terra-cotta and tile, beautiful in color and texture, and also sculptured stone will be called upon to embellish and distinguish, though not in any manner to clothe or conceal, the concrete structure. The presence of these materials may be needed as a saving grace in these early days of design in concrete, to save the designers from a too brutal conception of the forms they deem the material must neces-

sarily take. This is an unfortunate, though marked tendency now, in what should be a refined and restrained domestic architecture, to shape concrete, and its lath and plaster imitations, into the crude, though characteristic, forms of the old mission work. It is needless to say that these forms have no meaning outside of their original environment and would not have existed there but for the exigencies of the case—the crude nature of the materials procurable and the absence of all skilled labor.

But today, with art and science co-operating, it would seem as though architecture were on the verge of an awakening. Commercial architecture with us is beginning to feel the thrill. Abroad monumental architecture as well is showing signs of a renewed joy in life, and structural concrete, both of itself and embellished with richer materials, furnishes the new and seemingly adequate medium of architectural expression.

Much of this was written, as I said in opening, some years ago. Looking back over these years it does not seem that there has been an advance in the aesthetic field as opportunity seems to have offered, or as might have been expected. But we cannot lay this backwardness altogether to the manipulator of concrete nor to the architect. Economics may be a factor, but it could not be a controlling one in a community which had the desire and will to advance in the art of self-expression which the art of architecture pre-eminently is. I know the time is not ripe for a finished and full expression for the community or the national life is not unified and complete; but there are qualities under the surface—refined and human qualities—which might at least find an echo in our concrete structures. Perhaps the echo is being heard, faintly at least. I sometimes think so but with you all I desire the day to hasten, not only when architecture in concrete or otherwise shall express us, but when we shall have better selves which will demand and receive an interpretation in architecture.

* * *

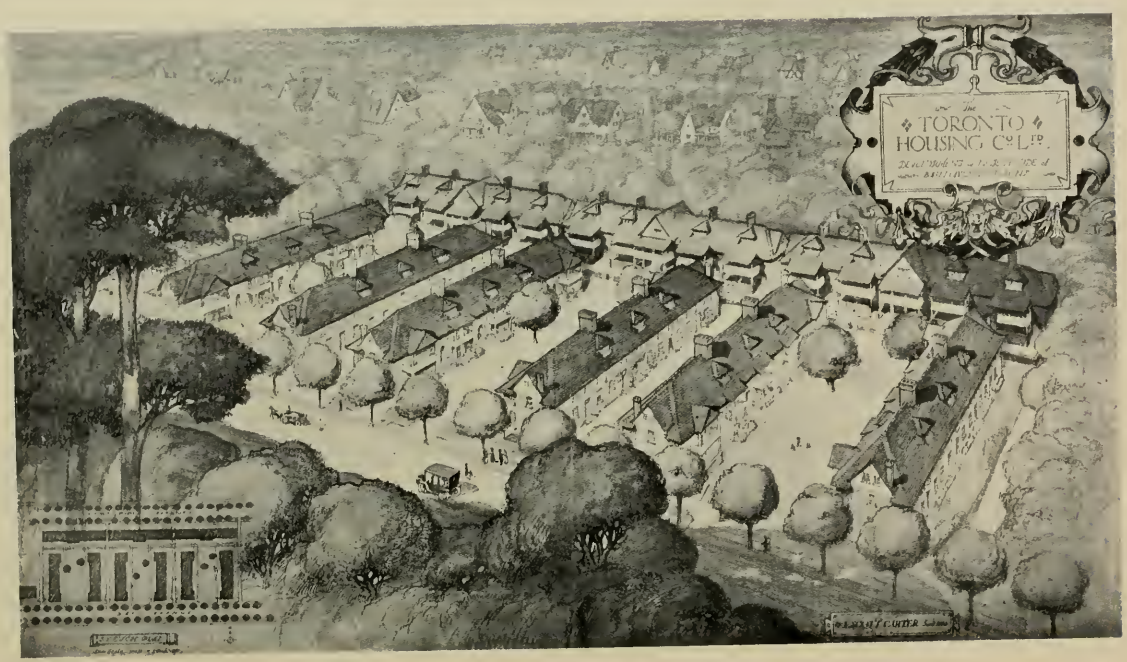
Tall Buildings in Manila

According to a special correspondent of the United States government writing from Manila, there has gradually grown up a movement for taller buildings since the advent of concrete and steel construction. Heretofore, he states, three stories have been the limit on buildings in Manila and the islands, and not over four or five reached more than two stories in height. Within the last two years five or six new structures of concrete and steel have been built with three stories and one of four stories. One business block four stories in height recently completed has proven so attractive for offices that two more stories are to be added. The advent of the taller buildings, say an Exchange, is due to the belief that the reinforced-concrete structure will withstand earthquakes, which have rendered the buildings of ordinary masonry so dangerous. Thus far, however, there have been no severe shocks to test this form of construction.

* * *

Skyscraper Model at Panama-Pacific Exposition

One of the exhibits of unusual interest at the Panama-Pacific Exposition is a model of the 40-story pyramid-crowned steel and granite building of the Bankers' Trust Company of New York City. The model is about 40 ft. high and is an exact reproduction of the exterior of the building which towers 540 ft. above the street level. One of the architectural features of this building is its granite roof in the form of a stepped pyramid 94 ft. high. The model was prepared under the direct supervision of Trowbridge & Livingston, the architects who designed the building.



Light, air and sanitary conveniences as well as attractiveness show Housing Progress in Toronto. The City guarantees $850,000 bonds, and $150,000 was raised by private subscription for this company. Rents are $14.00 to $20.00 per month

City Planning and Housing

Edited by CHARLES HENRY CHENEY

Some Town Planning Principles Restated*

By THOMAS ADAMS,
Town Planning Adviser to the Commission of Conservation, Canada

EDITOR'S NOTE.—*When the Conservation Commission of Canada last spring decided that the greatest thing that they could work for was the conservation of human life by instructing the cities of the Dominion in Town Planning and Housing, with the power of a great government and a large appropriation they cast about for the best man in the world to be had and finally invited Thomas Adams, Housing and Town Planning Adviser to the Local Government Board of Great Britain, to come to Canada for a term of years. Mr. Adams had been conducting the hearings on all new town planning schemes in England, under the Town Planning Act in 1909, and had consequently seen more of actual practice than any man on the American continent. He designed, organized and managed one of the largest Garden Cities of England, and was later succeeded in that position by Raymond Unwin, whose books have perhaps made him better known than Mr. Adams. The Canadian planning and housing work will be followed with interest in this country, as they are going at it from an essentially practical basis.*

TOWN or city planning is the application of scientific principles to all matters connected with the town or city. The factors which constitute a city and the order in which they do so are:

1. Industry and external transportation.
2. Healthy living conditions for the citizens.
3. Internal transportation.
4. Markets and food supply.
5. Education.
6. Recreation.
7. Civic center and monumental buildings.

The first object of the town plan should be to conserve and provide for the extension of its business interests, and to apply healthy conditions to the dwellings of the people. Complementary to both these objects, it is desirable to secure efficiency in transportation and in the supply and distribution of food, etc., and lastly it is needful to give expression to those communal and social interests which are represented in universities, schools, parks, playgrounds, town halls, museums, churches, etc. In this matter we are considering not the ethical importance of these institutions, but their logical order in the planning and building up of the city.

The three things to be aimed at in city planning are convenience, amenity and proper sanitary conditions. Under convenience we include everything that pertains to the efficient discharge of business, its protection and extension, the width and construction of streets, the disposition of railway tracks and economic distribution generally. Under amenity we include light and air both in factory and home, proper regard for environment, the preservation of valuable physical features which cannot be re-created, such as forest trees, separation of factory from residential areas, regulations of

* American City Magazine.

heights of buildings, etc. In regard to proper sanitary provisions, the first essential in any city is its water supply, and complementary to that is an efficient system of sewage disposal. That matter affects the city life as a whole, but there are also those methods which can only be secured by proper action on the part of the individual citizen. In that respect we have to regulate the collection of the garbage and the cleaning up of back yards, etc. There is, of course, a certain overlapping in regard to these three objects, but they may be roughly classified as above. The heights of buildings, for instance, require to be regulated in relation to the traffic of the city—i. e., for convenience and economy—as well as for the purpose of amenity.

The functions of the engineer and his architect have to be more carefully considered than hitherto in regard to the town plan. In connection with convenience, we require the engineer to consider highways from the point of view of their planning and direction, as well as from the point of view of their construction. The lines, widths and direction of the main arterial roads are among the most important things to be considered in the planning of a city. The relation of these to the secondary streets of the town and the relation of both to the system of sewage and water supply distribution are matters in regard to which he is the proper adviser. He it is, also, who has to consider questions of transportation by rail and waterway, and the location and planning of factory areas in relation to the railway and waterway system. It is obvious, of course, that he is the man to deal with the sewage and water supply systems as a whole, so far as planning and construction are concerned.

The architect comes in in regard to these matters, to deal with the hygienic conditions in the factory and the home, the grouping and setting out of buildings in relation to the street, and necessarily in regard to all matters of architectural design as far as these affect convenience and sanitation. The architect should co-operate with the engineer in the planning which relates to these matters. The medical officer has his function to perform in criticising and correcting the work of the engineer so as to secure adequate protection for public health. All these professions have their interest in the part of the city plan which relates to convenience and sanitation, but the proper order in which they should advise is engineer, architect and medical officer. Mistakes are being made every day because we do not recognize this order.

In regard to amenity we include the matters which almost entirely come within the domain of the architect, including the landscape architect, although in this regard it is the duty of the engineer to co-operate with the architect. The architect has to consider the height and character of buildings, the preservation of natural features, the position and layout of parks and playgrounds, the open spaces around dwellings and factories, the disposition and grouping of civic centers and public buildings.

I have referred to the necessity for co-operation between the architect and engineer. It is also necessary in connection with town planning to have co-operation between different municipalities and between municipalities and owners. Here comes in the work of administrator. We have to look to him for considerations of finance. For instance, there is the important question of spreading the cost of a scheme over a period of time so as to secure that the present generation will not pay for the benefits which will accrue to posterity, but that there shall be an even distribution of cost in proportion to benefit received. Secondly, there is the question of adjusting the cost and method of development to the character of buildings to be erected. Streets serving industrial areas should be of different construc-

tion from the streets serving residential areas, and the latter streets should be of less width than the main thoroughfares.

The lawyer has also an important part to play in the preparation of town planning schemes, although his position is frequently disregarded until the effect of his advice is that the propositions of the architect and engineer are impracticable. As a matter of fact, the framing of the provisions of the scheme, their adjustment to legal conditions, the extent to which they are practical under existing law, etc., are vital considerations in connection with the preparation of town plans. That is why, in proper town planning, legislation is necessary as a preliminary to the preparation of town planning schemes. An engineer and an architect may visualize a fine scheme for laying out a city; it may be based on sound principles; it may be perfect from the public point of view; but what value is it if there is no machinery for carrying it out, and no means of giving its principles effect unless at prohibitive cost to the community? Before we can get effective town planning, therefore, we have to have the co-operation of the best skill which can be brought to bear upon it by the engineer, the architect and the lawyer, and each has an important function to perform throughout all stages of its preparation.

What a Town Planning Scheme Is

This will be realized all the more with regard to the fact that a town planning scheme does not deal alone with the beautification of a city, but enters into the root questions of its economic and engineering development. Town planning schemes in Britain, such as those of Birmingham and Ruislip, include provisions with regard to the laying out of new streets, widening existing streets, adjusting street boundaries, relaxing local by-laws, submission of estate subdivisions for municipal approval, modification of plan as circumstances change, appropriation of land for specific purposes, fixing of building lines, determination of proportion of building land which should be covered with buildings, limitation of heights of buildings, fixing a maximum number of buildings to each acre, fixing of zones for industrial and residential purposes, prevention of nuisances, etc., and including the important questions of compensation for injury caused to property and of recovery of betterment caused by the scheme.

We see at once how necessary it is to have proper power to initiate and carry out a scheme both for the protection of the municipality and for the purpose of securing equity to the owners of land. It has been suggested that in these matters land owners in Britain are willing to submit to restrictions which would not be acceptable to land owners in America. I think that is because we do not understand the extent to which land owners as a whole in a city will co-operate in securing right conditions when the restrictions affect them as a whole and not individually. Moreover, in America many of the larger owners of real estate have themselves begun to voluntarily apply restrictions and to carry out what we call private town planning schemes. Much of what is suggested is to the effect that principles which owners of real estate find beneficial to their own interest when applied to their estates should be made of general application, and should be extended to areas which are used for housing the poor as well as to those which are used for housing the well-to-do.

While the importance of legislation has to be emphasized, there is much that can be done by municipalities while waiting for it. Topographical maps of all cities require to be prepared. These maps should include details of the buildings already erected, the distribution of population, and of traffic conditions. In San Francisco it is estimated that $26,000,000 was the cost

of improvements which might have been avoided if the city planning had been adjusted to the topography. There is need for more investigation of existing conditions in regard to traffic distribution, factory and residential location, layout of railway stations and harbor fronts and the inter-relation of these. Town planning for the future is cheaper than replanning areas which have already been developed, and has not the same injurious result on property.

It has been proved that with healthy conditions the mortality in the city need not be higher than that in the country. There is a great cry of taking people back to the land. So far as that is practicable, it is desirable to encourage it, but it is well known that in every civilized country cities are growing, and there are few who will venture the opinion that they are likely to cease to grow in the future. We have to try to bring more land to the people as well as to take the people to the land.

There are men who think interference with what they call natural growth and any kind of originality is a sin. To them town planning, and even projects for improvement of housing conditions, are visionary; they look to individual regeneration for all measures of reform. These men are unsound in their judgment because they fail to appreciate the fact that the city and homes that constitute part of the city are artificial creations, and that in all things artificial we have to improve as we progress and regulate as we grow.

There are others who think that all things fanciful and picturesque are fads, therefore town planning is a fad. That is because they may have failed to inquire what town planning is or have been misled as to its meaning.

The frequent assumption that town planning relates only to the aesthetic side of city life and does not enter directly into its business, its ethical and its public health conditions, is responsible for this error. It is desirable that citizens should aim at making their city beautiful, that they should endeavor to give expression in fine buildings and streets to their civic ideals, but these things, after all, are only the coping stones of the city structure, of which the foundation is the efficient workshop and the healthy home.

Town Planning and Growth

We see, then, how broad-based town planning is. We see also that the improvement of housing and sanitary conditions is not detached from town planning, but is an essential part of it.

The proper time to plan existing cities as a whole has passed, but we can plan the portion that is likely to be built upon in the next forty or fifty years. Up to the present most cities have been developed anyhow. When Dr. Brown asked the little girl, "Who made you?" she said, "God made me so far," indicating her baby stature, "and I grew the rest myself." The same may be said of many of our American cities. They have been endowed by Providence with beautiful sites and might be said to have grown the rest themselves. But the analogy is imperfect—for the child, like all natural things, but unlike the city, was the conscious design of its Maker, fashioned so as to grow up in symmetry and to develop along certain decreed lines. Some folks say that a city must be allowed to grow and you cannot control its growth; but cities are not really growths at all, for proper growth follows the lines of some plan; witness the tree or the child in nature. What our cities really do is to expand or bulge out by accretion.

In Britain we have found from long experience that it is futile to destroy slums unless you find some means to rehouse those who now live in them.

In both Britain and America the evil has become too deeply rooted to be remedied by mere regulation.

It may be claimed that those who live in slums do not want better conditions, but in practice it is found that improved conditions converts the men and women of the slums into decent and responsible citizens.

When we allow a slum race to be created in our midst, we cannot expect to reform them suddenly merely by altering their conditions. Nature demands compensation for any lack of foresight and indifference in the past; and when once people become habituated to slums, we have to allow time for them to improve. The state must take a share of the responsibility during the period of transition. Socialism or not, it is the duty of the state to help to heal the sores it has allowed to be made in the body politic; national money, advice and supervision are essential. It is true that in sanitary matters much is due to individual irresponsibility and ignorance. A Scotch minister once asked his man John if it would not be better for him to give up drinking liquor. "Do you nicht take a drappie yourself, minister?" asks John. "Yes, but circumstances differ." "Very true, sir," says John, "but can you tell me how the streets of Jerusalem were kept so clean?" "No, John." "Well, sir, it was just because everyone kept his own door clean."

No doubt much of the trouble of street and back-yard cleaning could be improved by individual care, and more regulation is needed in these respects. But apart from sanitary matters the individual has little power and no responsibility. We must accept the fact that the responsibility for planning our cities, for improving housing conditions and removing the slums rests with the governing authorities and the business men of our cities. We have to pay for past neglect even if in doing so we have to sacrifice some of our theories regarding individual liberty and what we call the functions of government.

* * *

This Does Not Look Like Hard Times

Architect Louis P. Hobart of San Francisco has more than $2,000,000 worth of work on the boards, which is most gratifying in view of the tendency of the day to talk "hard times" and "no business." The Hobart list includes:

Federal Building, Portland, Oregon	$1,000,000
University of California Hospital, San Francisco	600,000
Residence for Mrs. Vanderbilt	500,000
Shredded Wheat Factory, Oakland	120,000
Public School Building, Berkeley	75,000
Residence for Mrs. Ehrmann, San Francisco	60,000
Total	$2,355,000

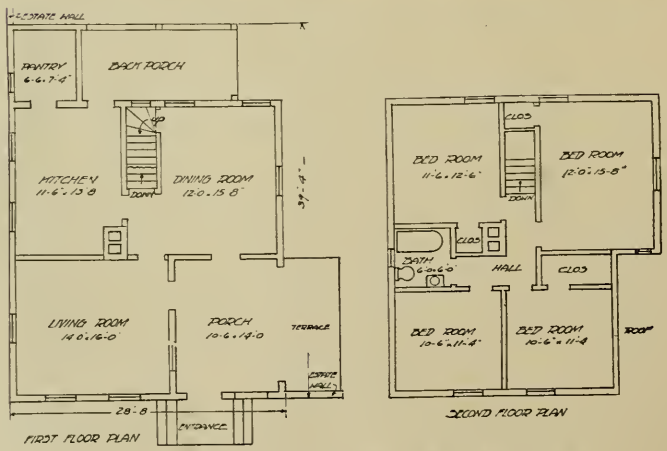
Besides the above Mr. Hobart is working on the San Francisco hospital competition and a number of minor commissions. Mr. Hobart's work will be illustrated in an entire issue of the Architect and Engineer at an early date.

* * *

Quite True

Town Development says: One man with vision and poise is worth more to a community than fifty imbued only with the idea of delirious fireworks.

CONCRETE COTTAGE WITH 8-IN. WALLS BUILT AT A COST OF $2,700



PLANS OF $2,700 COTTAGE WITH 8-IN. WALLS, NEAR MIDDLEBURG, VA.

COTTAGE WITH 12-IN. CONCRETE WALLS BUILT FOR $2,450

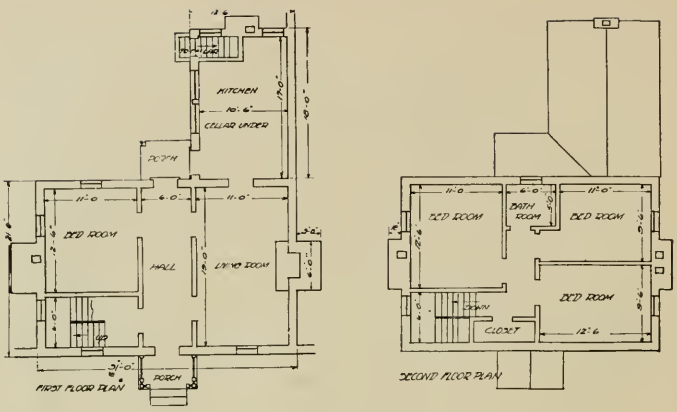
Two Interesting Houses with Solid Concrete Walls

THE accompanying illustrations, reprinted from Concrete-Cement Age, by courtesy of that journal, are splendid examples of what may be accomplished in solid concrete wall construction for small city or suburban homes. Architects have frequently argued that a solid concrete wall is too heavy a type of construction for small houses—yet the photographs reproduced here would seem to indicate to the contrary.

The houses illustrated were built by Claude H. Haga on the estate of Joseph B. Thomas, near Middleburg, Va. They are at the entrance of the Thomas estate, one intended for a lodge and the other for the residence of the gatekeeper. The front walls of both houses are continued in the walls of the estate. The house with a chimney at either end and with a lattice-screened doorway was designed by Mr. Haga, the other by Frederick J. Herner, an architect of New York city.

The house designed by Mr. Haga has 12-in. walls poured in steel forms —the Morrill system, using shallow pan sections 2 feet by 2 feet. The dimensions are shown on the accompanying plans. The first story has a ceiling 8 feet 6 inches, and the second story 4 feet to the rafter plate. Walls and chimneys contain approximately 95 cubic yards of concrete. The mixture used was 1 part cement to 4 parts sand, poured wet and then filled in with field stones—all that the wet mortar would cover as the work progressed. Mr. Haga is of the opinion that 50 per cent of the bulk of the wall is made up of fieldstones. The only reinforcing used consisted of bars placed around the openings and in the fireplaces and chimneys. Chimney flues are of terra totta and the steel forms were used in part in guilding up the chimneys, the taper being given by a wedge-shaped wood form section, moved upward as the work progressed. The fireplace was made with wood forms on which a steel throat rested. On this throat the flue lining was started. The fireplace was later lined with fire-brick.

Ground floor joists have their bearing on a ledge of the foundation walls, which are 16 inches thick, except in the cellar section. The ceiling joists are fastened by joist hangers, held in turn by a 2-inch by 8-inch timber



PLANS OF CONCRETE COTTAGE NEAR MIDDLEBURG, VA.

which is bolted to the walls. Mixing and placing the concrete were done by hand, but in placing the field stones they were dropped into the forms direct from wagons which brought them in, until the wall was above a height of 8 feet.

The house is plastered direct on the concrete inside and stuccoed outside.

The other house has 8-inch walls of 1:2:4 mix, cement, sand and stone; and because of the thinner walls is much more strongly reinforced. It was also poured in steel forms. Both houses were built at about the same time and in connection with estate walls and various small outbuildings. Mr. Haga figures the cost of the 12-inch wall house at $2,450 and that of the 8-inch wall house at $2,700. He was sure enough of these figures to take a contract to build another house almost identical with the one with 12-inch walls and two chimneys at a price complete of $2,850, and expects to make a good profit. Other cottages being erected on the Thomas estate are also constructed with 12-inch walls, using field stones for filler.

* * *

Coming Coast Convention of American Institute

A meeting extraordinary of the American Institute of Architects will be held in San Francisco and Los Angeles, either in May or October. The session will include lectures, papers, discussions, and social entertainments. An excellent opportunity will be afforded for giving emphasis to the great work of the Institute, and in a manner which has of late been impossible of adequate expression, owing to the considerable amount of business which comes before the Annual Conventions, and of the lessening of which there appears to be no hope.

The occasion of the two expositions in California provides attractions of rare interest, and appears to indicate an opportunity for holding an "Extraordinary Session" of the Institute such as will not be likely again to develop for some time.

Vibratory Influence of Machinery on Buildings

By HENRY BLOOD*

THE extent to which vibrations from printing presses, even when of small size, may be communicated to buildings was illustrated by a case that occurred in Portland, Oregon. The Commercial Club owns and occupies an eight story steel frame building at the northwest corner of Fifth and Oak streets. It is 100 feet by 100 feet, and about 155 feet in height on the street fronts. The columns are plate and angle, fireproofed with concrete. The floors have steel beams and girders, with reinforced concrete slabs of 6 to 8 foot spans. Most of the north wall and two bays of the west wall, beginning at the street line, is party wall, built of brick. The girders run east and west, the beams north and south. They rest on bearing plates and are well anchored in the party walls. Where the walls are not of party construction they have steel columns and girders.

The block is 200 by 200 feet, and lies between Oak and Pine, Fifth and Sixth streets. Adjoining the Commercial Club on the north is a four story building, 50 by 100 feet, with brick walls and interior of wood construction. The stories are higher than those of the club, so that its roof reaches nearly to the sixth floor of the latter. It has a line of girders and posts running lengthwise through the entire height, and slightly south of the centerline. The joists run north and south, and rest in the party wall. Next to this building and on the corner of Fifth and Pine street there is another four-story building of similar construction, with brick walls, a line of posts and girders in the center, and joists running crosswise. Its height is the same as the building in the middle. The wall between these two is also a party wall.

Connecting to the Commercial Club on the west side through two bays of party wall is a three-story building, 100 by 100 feet of ordinary brick and frame construction, occupied by the Hotel Oxford.

The lower four floors of the club are leased for offices, the remaining floors are used by the club. Nearly half of the seventh and eighth floors on the Fifth street side are open, being occupied as lounging and dining halls respectively.

In the fall of 1912 vibrations began to be felt in the Commercial Club building. They were noticed at irregular periods sometimes during the day, sometimes late at night, and at times on Sunday. They were sufficient to make freely hanging mirrors or pictures on the walls to sway quite perceptibly, to make glassware and china rattle in the china closets, and to be apparent to a person sitting quietly with his back against a seat, especially in the lounging room. At one or more points the floor slabs vibrated. The motion was more noticeable in some parts of the building than in others. Some of the tenants became uneasy, fearing that the building was unsafe. The manager asked the fire marshal to see if he could determine the cause. He turned the request over to the building department. A search was made for printing presses on the block, and the Independent Printing Company was found on the third floor of the building at the corner of Fifth and Pine streets. It did job printing, and had four small presses weighing from 1800 to 2400 pounds, setting north and south, and one larger press placed east and west near the west end of the building. The latter weighed about 9 or 10 tons, and had a horizontal sliding bed that made about 2,000 complete movements an hour. All were operated by motors.

* Engineer, Municipal Building Department, Portland, Oregon.

Inquiry showed that one and sometimes all of the presses were run late at night to get out an order, and occasionally they were used on Sunday. No vibration could be felt in the building in which they were located, or in the first story of either this or the middle building, when they were running, but there was little doubt that they caused the trouble. One trial lasting about fifteen minutes was made by having different presses operated, and then all run together, while a mirror on the seventh floor of the club was watched. It showed no movement. Probably considerable time was required to get the building in motion.

The vibrations were much more apparent in the Hotel Oxford than in the club because of light construction, and the lack of rigidity in the connections. The clerk said that he could feel the swaying whenever the presses were running, that it swung the chandeliers and was otherwise noticeable throughout the most of the building. This was over 200 feet from the presses.

The printing company had moved to its location on this block in August, 1912, and it was about this time that the vibrations began to be felt. We were not entirely satisfied, however, until the company moved to another part of town in June of this year. Since then there has been no vibration of either building.

The floor construction and party walls of these buildings formed an admirable arrangement for conducting vibrations.

In another case that caused complaint during 1913, there was a printing plant on the second floor of a corner building, adjoining a four story lodging house, and with a party wall between. Both buildings are of frame construction, with brick bearing walls, and appear to be in good condition. The motion from the presses is very pronounced in the lodging house, and is annoying to the patrons. There was no question in this case about the cause, but it was feared that the safety of the building was in danger. The building department after an investigation concluded that it is still safe.

Two or three other buildings here used as printing shops vibrate in much the same manner as a light framed machine shop. They usually, however, have no other tenants except on the first floor.

The case of the Commercial Club building is described at length because of its somewhat unusual features. It shows that buildings connected by party walls may be affected by presses or other moving machinery in anyone of them, and that the vibrations may be more noticeable in a remote building than in the one containing the machinery.

* * *

International Program for Replanning Belgium

The officers of the International Garden Cities and Town Planning Association, who are also officers of the English Garden Cities and Town Planning Association, propose to begin now the work of replanning Belgium. They have sought the endorsement of Belgians now in England and have undertaken a series of lectures throughout the British Isles, which began February 11th with a conference in the Guild hall in London at which members of the British, Belgian and French governments were expected to be present.

The program included trips to various English garden villages and suburbs. A permanent exhibition of plans, models, and the like is to be gathered and a school will be opened in which architects and others may study the questions involved. Information regarding the plan may be had of Ewart G. Culpin, 3 Gray's Inn Place, London, W. C., England.

The Architect as He Meets Public Opinion

CARL F. GOULD, Architect *

THERE seems to be a very considerable misconception, or it might be said, no conception at all by the public of what are the functions of the architect.

The architect has existed for ages and will in all probability always exist, and his function will never be replaced as long as the fundamental elements of the human race exist.

It is not understood by the public that architecture must necessarily be a profession just as law and medicine must be a profession. In order to get the product of the master mind the architect must produce his work under conditions which will allow him to be free to give his mind disinterested attention. The creative mind and the commercial spirit can never be coincident.

If the public does admit that the architect had a function it is usually considered that he is a cross between a real estate agent and a contractor.

This confusion may arise from the fact that often real estate companies furnish plans for buildings and often contractors furnish plans for buildings. It is rarely believed that the architect can serve the public in an economical way. It is usually considered that an architect's services are a luxury and only necessary to add certain superficial character to the exterior of a building, just as a culinary artist would add frosting to a wedding cake.

Without doubt the architects, or those practicing under the name of architects, are partially responsible for these erroneous views. The architect as a rule has been a very modest and quiet individual, preferring to do his work without appearing in public view. His work is necessarily of a studious character, which ill equips him for exploitation.

It is, however, both unfair to the public and to the architect that a clearer conception of the architect's function is not generally understood. The object of the architect is first and last to give to the public more economical, better designed and better constructed habitations, and it is only by the architect working in his professional capacity with a complete understanding by the public of his function that this result can be brought about.

An individual, when he desires to construct a building, whether it be a bungalow or a great commercial project, should ask, "What is the method of procedure in order to get my idea into its executed or material form?"

The customary way for such an individual is, unfortunately, to get advice from real estate agents and contractors, and it is only as a last resort that he comes to the architect. It is often at a time when the individual's ideas have become wrongly crystallized.

A prospective builder would find his troubles infinitely simplified if he would take the architect into his confidence at an early stage in his contemplated operations. Often he could advise him as to advantages of several alternate pieces of property which he might have in contemplation on which to erect a structure. The architect's ideas of exposure and outlook, the advantages of certain lots for commercial purposes, etc., are matters on which he should be equipped to give valuable information and advice. Often the determination of the direction from which the rays of light comes, or of the exposure, make for commercial success or non-success.

* Associated with Charles H. Bebb, Denny building, Seattle. Extract from an article in Pacific Builder and Engineer.

The real estate agent, of course, must be consulted, but the architect's ideas would invariably be advantageous at this preliminary period of the prospective builder's enterprise, and such consultation is always included within his legitimate fee for services.

When the owner has selected his location it is well for him to have a very frank talk with the architect, furnishing him all his ideas and conceptions of what the building should be, stating the requirements as to arrangement in plan and the purposes of the building, the character the building should have, etc.

The architect is better equipped than either a real estate agent or a contractor to then state to the owner the probable cost. After plans and specifications are completed and contractors' bids are handed in the variations are often between 10 and 15 per cent, so that at such a preliminary stage it could not be expected that the architect could approximate the cost closer than 15 to 20 per cent. The architect keeps records of costs of similar types of buildings, and by the process of obtaining cubical contents of the proposed building is able to give an approximate cost, and he is the only one at this stage in the proceedings who could do so.

We will consider now that the owner has had his preliminary conference and has given all his information into the hands of the architect and is satisfied that the building serving his purpose can be constructed with reasonable allowance for variations within the amount available for building.

The architect then proceeds to make what are known as preliminary sketches. Usually these sketches are made at a scale of one-eighth inch equals one foot, including typical floor plans and an elevation.

Very often in studying the problem the architect finds several solutions, one being advantageous from one point of view and another from another point of view. He, therefore, calls in the owner to discuss the relative advantages from the owner's point of view.

This process of adjustment at the preliminary stage may require a period of some time, but it saves time ultimately and conclusions can be arrived at, generally speaking, at this preliminary stage.

The preliminary studies are merely to locate the principal requirements, whether the building is to be entered through a vestibule or directly into the working space, whether the building is to occupy the entire lot or merely portions thereof, whether the east or west sun is advantageous for certain rooms, whether bedrooms or offices; whether the general appearance should be restrained, symmetrical or picturesque, etc., etc.

After having taken the architect into consultation as to the location, and having consulted with him as to the general arrangement, we pass to what is known as the working drawings, which are usually made at twice the scale of the preliminary sketches. These working drawings involve an accurate layout in plan of all the floors, of all the elevations, both exterior and interior, likewise typical sections, showing methods of construction, and are so complete that a contractor will know exactly what the building is to be constructed of and how.

Incomplete drawings oblige the contractor to make guesses, which guesses are frequently costly to the owner. These working drawings are accompanied by a complete set of specifications taking up in the form of a description what it is impossible to express on the drawings and stating how the contractor shall do certain portions of the work, how he shall cooperate with other contractors and in general a complete thesis of the building to be constructed.

By having complete drawings and specifications the contractor is not only able to give a closer estimate, but when the work proceeds he can plan ahead, knowing what the materials consist of, and the work is carried out with greater expedition and consequent economy.

It must be clearly understood that the contractor does not furnish drawings as is often the case where an architect is not employed. The argument is often used by some types of contractors that they will save the owner the expense of drawings. By so doing the contractor becomes the only competitor and is the only judge of the quality of his work and the material furnished. This method of building, however, is unfortunately only too prevalent, and results in structures that are badly arranged in plan, frequently space wasted, badly designed as to exterior and only too often constructed of the most flimsy material.

With accurate, complete drawings and specifications the contractor is kept to a fixed standard and the owner is apt to get accurate competitive bids.

The architect should be co-operating with the owner from the very conception of the building to its final completion, including the final payments to the contractors. The contractor is thus freer to carry on his functions of constructing the building.

It follows then that after the contractor has begun work that the architect should be in charge to see that the plans and specifications are conformed to, and it is upon his shoulders that rests all the problems that may arise as the building is in progress. It is he who has made a study of the building, knowing what the final result should be, and it is he alone that can pass on questions that may arise and often do arise as the building is in progress.

It may he understood also that the architect furnishes full-size details of every molding and ornamental detail that goes into the building. They are a part of its design just as much as the arrangement in plan, and these drawings are furnished from time to time as the contractor requires them, and are not and should not be furnished by the planing mills or metal workers, etc.

It is the architect who draws up the contract between the contractor and owner and it is through the architect on his certificates that payments are made. He becomes the arbiter in questions in dispute.

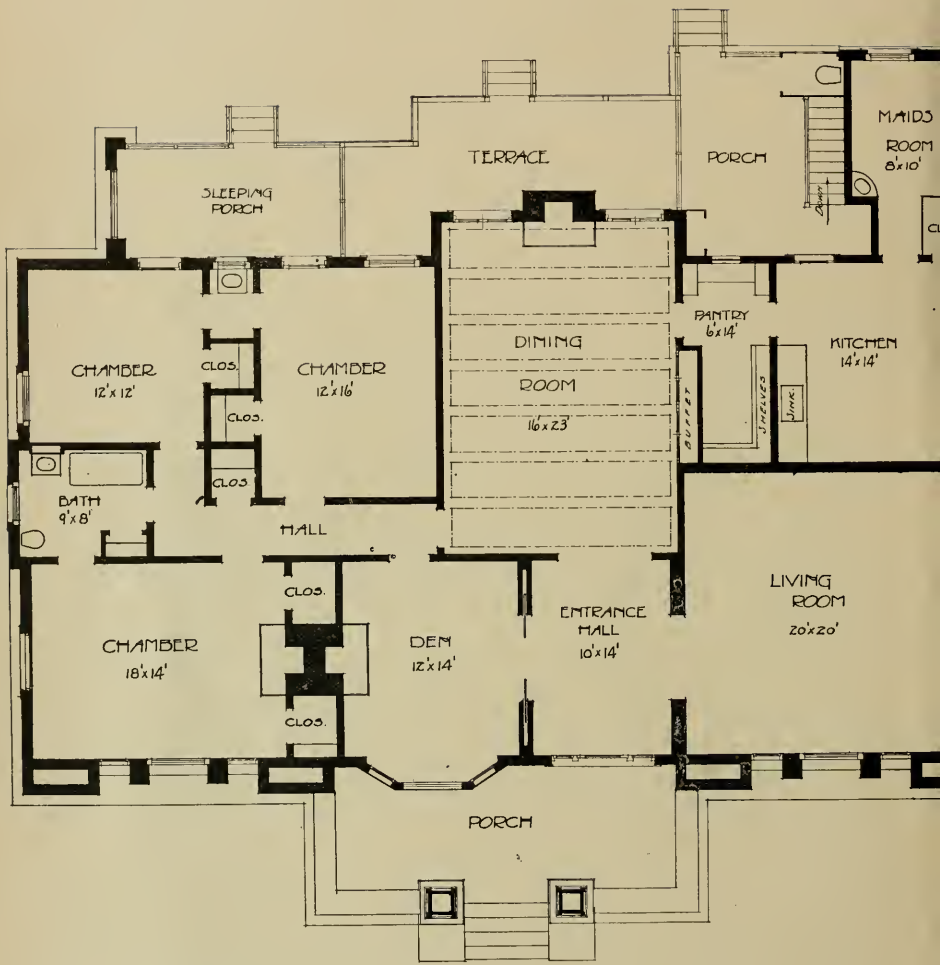
It is only by thus following the steps in their logical, natural sequence that an owner can obtain the best results with the minimum fuss and worry and economy.

The prospective builder must more and more recognize wherein the architect can be of service, because it is only through the co-operation of the owner, contractor and architect that the most economical, the most advantageous results are obtained.

* * *

Remarkable Streets

The highest street in the world is Main street, in Denver; the richest is Fifth avenue, in New York City; the widest is Market street, in Philadelphia; and the shortest is the Rue Ble, in Paris. The dirtiest street is that of Tehanksti, in Nankin; the cleanest is the Via Castile, in Seville, Spain; the most aristocratic one is Grosvenor Place, in London; the most beautiful is the Avenuedes Champs Elysees, in Paris. The narrowest street is Vio Sol, Havana, Cuba, which had a width of no more than forty-two inches.



FLOOR PLAN, MISSION BUNGALOW
TUCSON, ARIZONA

Courtesy Co

MISSION BUNGALOW, TUCSON, ARIZONA
Trost & Trost, Architects

DETAIL OF ENTRANCE, MISSION BUNGALOW, TUCSON, ARIZONA
Trost & Trost, Architects

Why the Engineer Fails of Public Recognition*

By PROF. GEO. F. SWAIN, of Harvard University

IT is an opinion held very widely—particularly among engineers—that the engineering profession is not appreciated at its full value, and that the engineer does not receive the recognition in public life and as a leader that his attainments entitle him to receive. In times past I have not hesitated on various occasions to raise my voice, feeble though it may be, in support of that proposition. I have not changed my views at all. However, it seems to me that possibly by emphasizing it continually, we may overdo a little bit that aspect of the matter, and I am, therefore, going to ask you tonight to take a different point of view with me, and to inquire, if the engineer has not his recognition, what the causes for it are, and how they may be remedied.

Of course, as a purely professional worker, the engineer is always necessary and will always be called upon to do engineering work. Moreover, statistics show that the remuneration which engineers receive is as large as that received by members of the other professions, on the average. It is a question of supply and demand, and the engineering profession is not overcrowded. I feel certain of this from my experience in having turned out a great many young men year after year, and having placed them in positions.

Moreover, happiness and content, real success, service to mankind and to a man's family, do not depend upon money, and are not measured by dollars and cents; they can be obtained just as well when the remuneration is moderate as when the remuneration is very large, and engineers, as a rule, I believe, receive compensation sufficient to enable them to live comfortably.

In my opinion, in recent years the respect paid to the engineer, if measured by financial remuneration, has increased, and engineers now frequently receive very large fees—fees that 25 or 30 years ago would have been considered almost out of the question. However, those fees are not as large as those received by lawyers or doctors, of course, for the reason that the engineer does not appeal to sentiment, which is so potent a factor in the other professions. I presume that fear, love and avarice are the most potent emotions. The law appeals to all of them. Medicine appeals to fear and love. Engineering appeals to none of them. Another potent factor in the human being is vanity. Architecture appeals to vanity. The architect can easily convince his client to put up a costly and luxurious building, upon which he receives his percentage, the percentage increasing as the work is less and less necessary. (Laughter.) The architect rightly puts a tax on luxury.

However, these matters will take care of themselves. We are chiefly concerned here with the status of the engineer as a leader in the community, as a moving force, as an administrator or executor, who leads in the solution of great problems.

The suitability of a man for leadership depends upon two things—his knowledge and his personal qualities. Most of the great undertakings today involve engineering; most of them, to a very great extent. We recognize this. We know that we live in an age of applied science.

Law and business are equally necessary in the solution of these undertakings. There is no more reason, inherently, and no less reason, why the

* From an address delivered in March at the Convention of the American Institute of Electrical Engineers.

engineer should lead and be the employer any more than why the lawyer or the business man should lead and be the employer. It gets down, therefore, in the end, to the matter of personal characteristics. The lawyer or business man with personality can easily lead, and can hire the engineering brains and knowledge, just as the engineer, if he have the personality, can lead and can hire the legal and the business brains and knowledge.

If, therefore, the engineer does not lead, it must be because he lacks personal qualities, and if he lack the personal qualities, he ought not to lead. There is no mystery about it, no injustice. By personal qualities I mean character, presence, tact, ability to handle men, breadth of mental vision, and mental training.

Some of these qualities are inherent, and others are developed, more or less, by training and experience. There is no reason to believe or to assume that one class of men in the same country and at the same epoch are inherently superior in regard to personal qualities to any other class. Have we any reason to suppose that the engineers are inherently superior to the members of other classes in this country? It does not seem to me that we have. What indications there are might be considered to point the other way.

This is a matter upon which a person cannot speak at all positively or dogmatically, but I have talked with a good many college graduates as to what becomes of the men in their classes, and I have been rather interested to find that they almost all tell me that the ablest men in their classes go into law or into business. One thing, therefore, we must do is to induce young men of ability and character to become interested in engineering and embrace it as a profession. We can all of us do something in that direction.

The problem is then reduced to this further question—whether the personal qualities that come by training, or are developed by training and experience, give to engineers, to the engineering profession, preeminent qualifications for leadership. Those qualities which are influenced by training and experience are mental grasp, ability to reason, capacity to discern truth, desire for truth, and ability to deal with the human element. It is generally claimed that the engineer should be particularly fitted, not only by his knowledge, which matter I have already referred to and disposed of, but by his training, making him able to think straight, to have a breadth of view to discern the truth, a desire to get at the truth, and the ability to know the truth when he has got at it.

Now, how true are these claims? Do engineers think straighter than lawyers or business men? No positive statements can be made. Of course, I am speaking generally, and there are exceptions to any statement that can be made, but I doubt whether engineers as a class think straighter than lawyers, especially, or the well trained and experienced business man. The training of the lawyer in the exact meaning of terms is one of the most important factors in making him think straight. We all know that misunderstandings and errors in reasoning come about because the exact meanings of the words or terms we use are not understood. The lawyer is continually concerned with getting at the exact meaning of words. In drafting statutes, in drawing wills, in all his varied work, that is one of the practical courses of discipline which he goes through—and there could be no better discipline.

Moreover, no man understands a question if he can only state it from the positive point of view: he must also be able to state it from the negative point of view; he must see not only what it includes, but what it excludes;

he must see not only the arguments in favor of it, but the arguments against it. In that matter, the lawyer has a most excellent training. When he assumes a case he puts himself in the position of his adversary and exerts his wits to the utmost to discover the weak points in his own case. He tries to discover every argument that can be brought up on the other side, and then prepares himself to meet it. I somewhat question if engineers in their experience go through quite as good a mental discipline as that, or whether in the schoolroom they get anything that is quite as good a mental discipline.

I think, therefore, that the legal training and experience, on the whole, train men better to think straight and reason logically than the engineering training. The single objection to the legal training is that the lawyer is apt to become an advocate. But still we all know that there are many, very many, capable, high-minded lawyers who will not take a case unless they believe that they have the right.

Now, how about breadth of view? Can we say that the engineer's training and experience give him greater grasp of subjects and greater breadth of view than those of the lawyer or the business man? Here again there may be doubt, but I similarly question whether today, and in the past, the training of the engineer has given him as much a grasp of subjects and a breadth of view as the training of the lawyer and the business man. I fear that the engineer concerns himself in college, and after college, too much with the minor technical details of his profession, and does not accustom himself to study, does not take interest enough in the consideration of the broad questions affecting the community in general. I know that is so in the colleges. I know that the young men get interested in the purely technical details, and that it is very difficult to get their minds away from these things to any large extent.

I am a great believer in the business man, and I believe that his experience, bringing him in contact, as it does, with law, with engineering, with all the varied activities of life, is a very excellent training. I should like to see more engineers in Congress, I should like to see an engineer become the President of the United States, but I should like to see, for once, a really good business man in the presidential chair. (Applause.)

Instead of complaining, then, although it is true, that the engineer is not recognized, I urge that we try to realize that there is a cause for it. We live in a world of natural law. For everything that is, there is a cause, not only in the physical world, but in the mental and the moral. Let us find the cause, if the engineer be not recognized, and the remedy.

Among the things I think we can do are the following: We can exercise our influence to bring the facts in regard to the engineering profession, its possibilities, the high character of its work, to the attention of our students and to induce the able young men of the coming generation to embrace the engineering profession. In the second place, we may influence technical education and try to secure a broader curriculum, with more attention to fundamental principles and less to technical details which the graduate must learn in the field after he graduates and which he can learn a great deal better there than in school. Let us insist on a training in the English language, so that our engineers shall not only be able to speak and express themselves properly, but be able to write a proper report, and therefore impress upon people with whom they come in contact that not only are they qualified in their engineering specialty, but that they are able to mix with men and deal with large questions in a comprehensive way.

CONGREGATIONAL CHURCH, RIVERSIDE, CALIFORNIA
MYRON HUNT, ARCHITECT

HOTEL BILTMORE, NEW YORK
WARREN & WETMORE, ARCHITECTS

The Hotel Biltmore

DOUBTLESS Pacific Coast architects will find considerable interest in the accompanying photographic plates, reproduced by courtesy of the World Traveler De Luxe, of New York's newest and largest hostelry —the Hotel Biltmore, designed by Architects Warren and Wetmore, of New York city. Elbert Hubbard has pronounced the Biltmore "the safest, sanest, most complete, convenient and luxuriant institution ever thought out by human brains and constructed by human hands," which is a wonderful tribute alike to the architects and builders. It may be an exaggeration, but if it is the pictures don't indicate it. They would seem to bear out Mr. Hubbard's estimate in all particulars—and more.

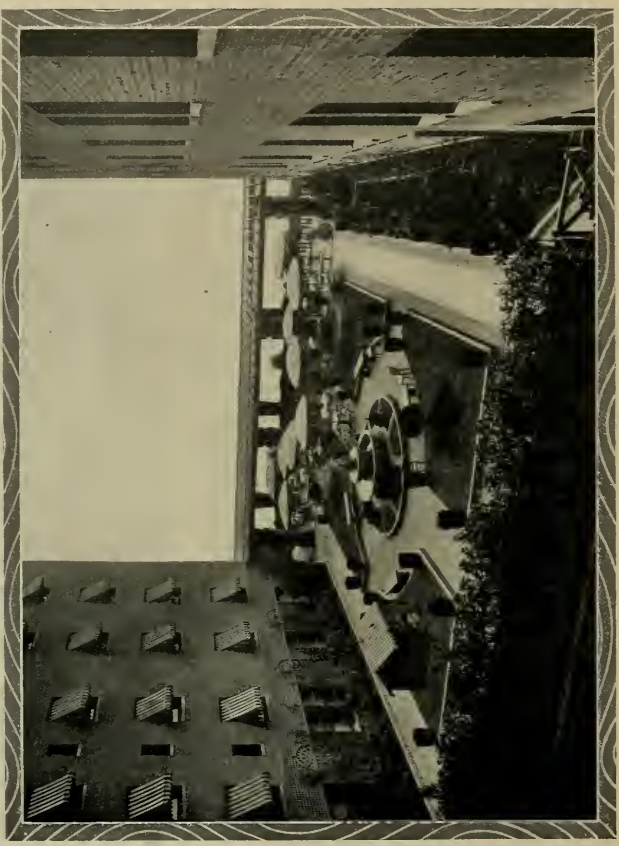
In the construction of the Biltmore the architects, Warren and Wetmore, have shown themselves not only men of genius in their profession, but also prophets, anticipating every possible contingency that might arise in the business of operating one of the greatest hotels on earth. It is therefore quite safe to say that the Biltmore marks one of the longest steps forward in the science of hotel building, and will serve as an example for a long time to come.

The Biltmore is twenty-two stories high and is built of steel and stone. There are more than 1,000 guest rooms. Writing of his impressions of this hotel a world traveler is quoted as saying:

"You can choose any altitude you want from forty to three hundred feet; you can even choose which way you want to look, north, east, south or west, and this choice will afford you either an outlook over the vast, throbbing city with the river and shipping in the distance, or in another direction again over the city to the pleasant faraway hills; or if neither of these please you, you can have a pleasant Italian flower garden with chairs and hammocks and dainty tea tables under your very window. Not many hotels in this day of phenomenal realty values that drive owners to building into the skies, can boast of such a variety of views for its guests; for in the Biltmore every room is an outside room.

"On every hand the superlative material excellence of the Biltmore abounds, inconspicuous because unostentatious, rich, quiet, elegant rather than strident in its superiority. It is apparent in the magnificent spacious marble lobbies, in the grand library with its shelves full of books, in the superb palm room, an apartment in which the best Italian ideas are improved and adapted to American standards, making it superior to anything found in the famous castles and palaces of the continent. It is borne in on you, again and again, no matter in which of the many beautiful cafes and restaurants you may elect to dine; and should your pleasure lead you to the "little ballroom" when a The's Dansant is in progress, or to the superb grand ballroom during one of the brilliant society functions, you will again find overwhelming evidences of the intangible something different and distinctive, which makes itself felt all over this great hotel."

ITALIAN GARDEN
ON THE SIXTH FLOOR,
SHELTERED BY
TWO WINGS,
HOTEL BILTMORE,
NEW YORK



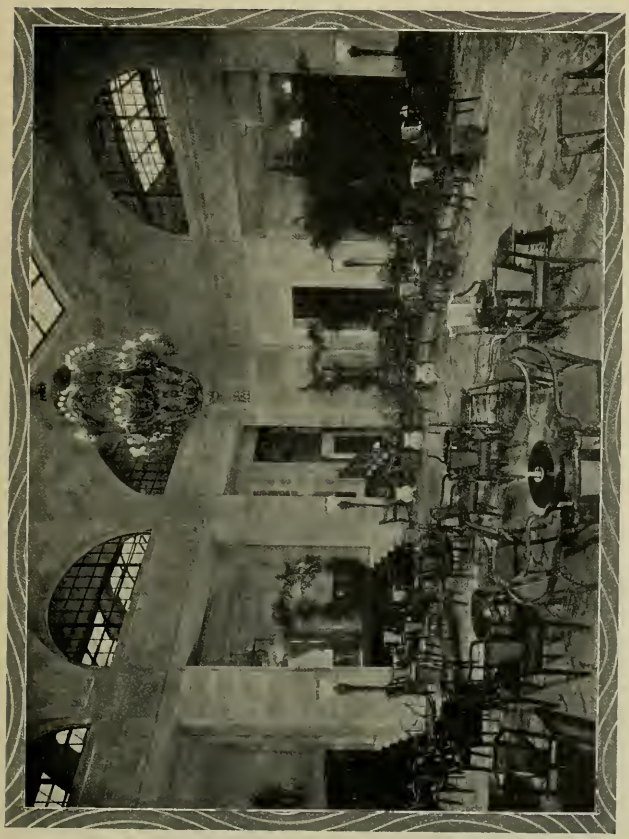
MAIN ENTRANCE TO THE BILTMORE, WITH HOTEL OFFICE ADJOINING

MAIN CORRIDOR.
WITH MARBLE
WAINSCOT
AND COLUMNS,
RARE TAPESTRIES,
PALMS AND
CARVED FURNITURE.
HOTEL BILTMORE

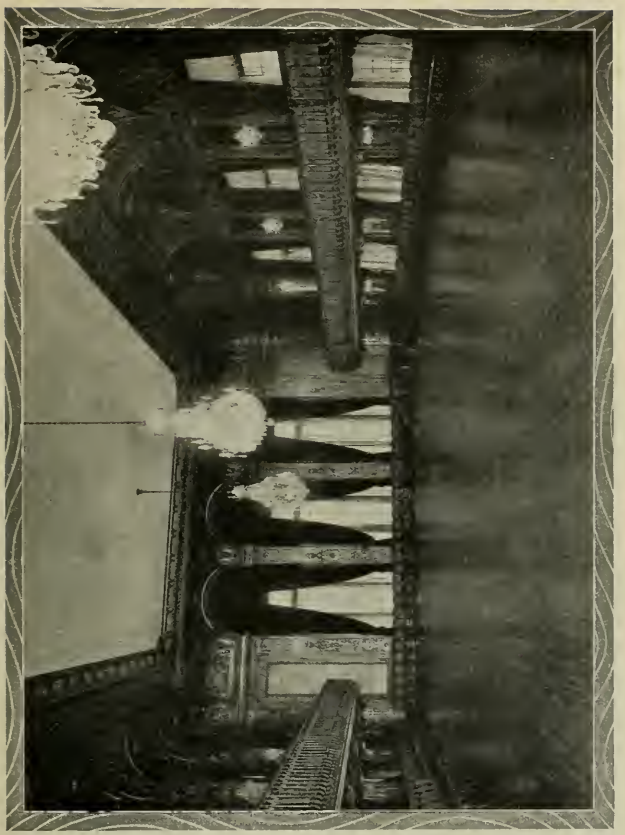
UNIQUE DINING HALL ON THE NINETEENTH FLOOR, HOTEL BILTMORE, NEW YORK

MUSIC ROOM, OR "LITTLE BALL ROOM," FOR PRIVATE RECEPTIONS AND SUPPER PARTIES

PALM COURT,
ENTRANCE
TO MAIN
RESTAURANT
HOTEL BILTMORE
NEW YORK

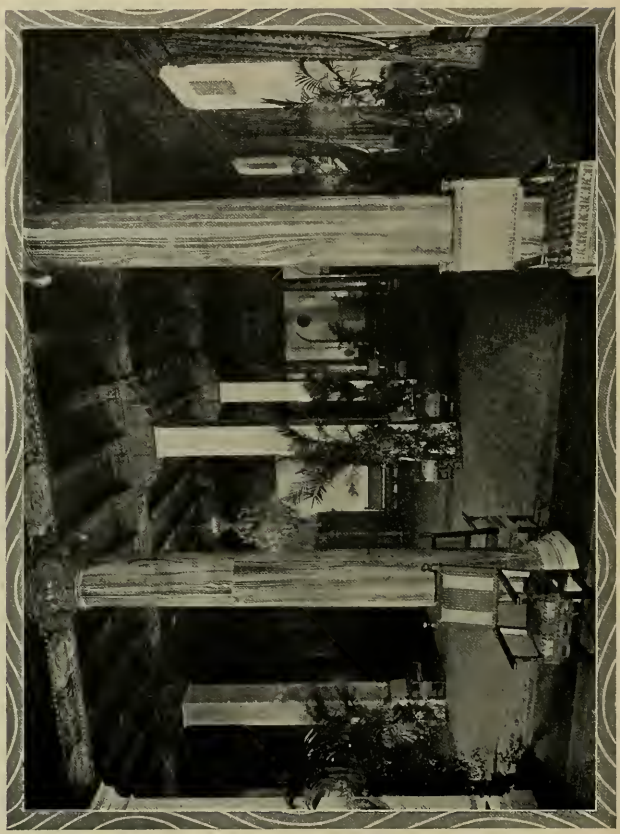


GRAND RESTAURANT, WITH MARBLE WALLS AND RICH HANGINGS HOTEL BILTMORE



LOUIS XIV
BALL ROOM
AND
BANQUET HALL,
HOTEL BILTMORE
NEW YORK

SPACIOUS FOYER,
ADJOINING
THE
BALL ROOM,
A FAVORITE
PROMENADE
HOTEL BILTMORE



CHILDREN'S PLAY ROOM ON ONE OF THE UPPER FLOORS HOTEL BILTMORE

LIBRARY
STOCKED WITH
SEVERAL THOUSAND
VOLUMES
OF WELL
SELECTED BOOKS
HOTEL BILTMORE

A GUEST ROOM WITHOUT THE CARES OF HOUSEKEEPING, HOTEL BILTMORE

Some Notes on Wind Pressure

By R. GRAHAM KEEVILL, C. E.

IT may be that our modern knowledge of wind pressure extends backwards only so far as the destruction of the original Tay Bridge in 1879. This bridge was part of the scheme for bridging the two firths—Forth and Tay—which was brought to a successful completion by the construction of the new Tay bridge and the erection of the Forth bridge; the latter, by the way, has been opened for traffic for twenty-five years today.

On December 28, 1879, whilst a train was on the bridge and a "gale of exceptional severity was blowing," one or more of the piers gave way, bringing down eleven 245 ft. span and 227 ft. span girders, precipitating the train and seventy-four people into the Tay. A Board of Trade enquiry was held which showed that opinion among engineers about wind pressure was in a state of chaos.

An endeavor was at once made by a Board of Trade committee to put matters on a satisfactory footing. After examining wind records, they on May 20, 1881, recommended:

"That for railway bridges or viaducts a maximum wind pressure of 56 lbs. per sq. ft. should be assumed for the purpose of calculation."

This immediately came into force for railway work, and was also adopted generally for structures on public works, although such adoption was purely arbitrary, or specified in local by-laws.

Much opposition was raised to this standard of pressure, because it was considered excessive and not justified by experience of existing structures. As far as buildings are concerned, the horizontal pressure assumed for designing has gradually been reduced to the 30 lb. per sq. ft. now often taken.

Two questions of great importance arose, and these have since been practically settled by research, viz:—

(a) Were the wind velocities given by the anemometers then in use, correct?

(b) What was the relation of wind velocity to wind pressure?

There are three methods for the measurement of wind:—

(1) Velocity measured by the Robinson anemometer.

(2) Pressure measured by a pressure tube anemometer.

(3) Pressure measured by a plate or board set face to the wind.

When dealing with a building of large exposed area, there is often a difference of opinion, in the absence of regulations, as to what wind pressure to adopt, i. e. whether the maximum average velocity, or the greatest gust. There is little available information as to what may be termed the area of a gust, but it is considered to be comparatively small. In a well-designed and well constructed structure, it would appear to be good enough to take the maximum velocity, and trust to the continuity of the structure to distribute local gusts.

The presence of windward and leeward pressures on experimental boards and structures has been known for many years, and many experimenters and writers have dealt with it. The windward pressure is of course caused by the wind striking on a surface exposed to it. The leeward pressure appears to be caused by the flow of air round the edge of the obstacle, tending to draw some of the still air, behind with it, and causing a partial vacuum. The direct pressure and the suction of the vacuum must be added together in order to arrive at what is known as the total pressure.

Up to the present, assumed wind pressures, which are undoubtedly excessive, have been in general use for designing and very safe structures

have been the outcome; but with the advance of knowledge, the very heavy structures, now common, will gradually give place to more scientific designs, and a corresponding saving of material. New methods now being evolved will then become of the greatest importance.

The Woolworth, at New York, is the highest office building in the world: 760½ ft. from the street level to base of flagpole on the tower, whose heaviest basement columns carry on each 4,740 tons, of which 1,300 tons is due to the action of the wind; whilst the weight of the steel framework is 24,100 tons. Probably the only commercial building in England approaching these dimensions is the Royal Liver building at Liverpool, which rises to a height of 290 ft. above sea level, and is built entirely of reinforced concrete.

* * *

Clay Products Display at the World's Exposition

OF the many interesting industrial displays at the Panama-Pacific Exposition, that of the Los Angeles Pressed Brick Company, in the Palace of Varied Industries, is attracting more than ordinary attention. It is the only clay products exhibit at the Big Fair and when one considers the magnitude of this great industry, it is surprising that there are not more concerns represented. It is admitted, however, that this single exhibit is worth as much to the clay interests as a dozen less pretentious displays by as many different manufacturers. Every product of the clay industry is shown, with the exception of terra cotta, which material the Los Angeles Pressed Brick Company does not manufacture.

Considerable skill has been shown in the construction of this booth, and the builder has succeeded in making a homergenious combination of the different textures and grades of brick and tile manufactured by the Los Angeles Company. The coloring throughout is soft and pleasing, and each panel, of which there are no less than fifteen, is a gem in itself. The front of the booth is set off with two columns composed of ruffled brick. These brick are a soft deep red, with ruffled face, and are laid up in black mortar, a most artistic combination. An arch of ornamental iron grill work connects the two columns near the top. Each column is surmounted with a brass lighting fixture, of the Craftsman style.

The side walls of the booth are a series of panels, the most notable being three panels composed of rug brick, recognized as the peer of all rough texture brick. It is a very rough faced brick which, when laid in the wall, bears a remarkable similarity to the soft and alluring tones of a Turkish or Persian rug. The south wall has a base of red pressed brick, with border and cap of rough texture, colored brick. The end panels are of the rough texture in dark and light colors. Three other panels are in light and dark enameled, plain and mottled effects, each panel being arranged in artistic patterns. The north wall has the base, border and cap of red pressed brick. Various styles and colors of pressed brick in shades of red, brown, gray and tan and in different designs appear in the panels in the north wall.

A fireplace and mantel in green enameled tile appears in the background with the rear wall to either side in beautiful green and brown mottled effects. Brown tile is used for boxing in a roof column in the center of the booth space. Lattice work in green carries up the side walls to the roof, which is built sloping inward and adds an artistic and finishing touch to the display. The roof is in deep red Mission, Spanish and Italian tile. The floor of the booth is constructed of red and brown quarry tile. The exhibit covers a ground area of fifteen by twenty-four feet, with walls extending to a height of fifteen feet.

Painting Structural Steel

THE following recommendations are abstracted from a report of the Committee on Iron and Steel Structures at a recent meeting of the American Railway Association:

Scientific research and numerous practical tests have demonstrated the fact that certain paint pigments, though possessing excellent moisture-repelling properties, will actually stimulate corrosion when applied directly to steel surfaces, while certain other pigments have a tendency to restrict and repress corrosion when used for primers and foundation coats. Because of this, we divide the pigments into rust retarding, and air and moisture excluding groups, using the first for priming and contact coats, and the latter for finishing and exposed outer surfaces.

A rust retarding coat may be suitably compounded from red lead mixed with pure linseed oil. The average stock mixture may consist of from 25 to 30 pounds of red lead to the gallon of oil. This mixture can then be reduced to the proper consistency at the time of application. A small amount of turpentine added to this brush coating will greatly help in its manipulation and will also provide for proper penetration. Red lead should always be mixed at the time of its application, for it settles quite readily, as it is an extremely heavy pigment.

Natural oxides have also grown to be very good for priming purposes, and very satisfactory results are recorded from their use. A number of consumers favor oxides because of their easier application and the less expert class of labor which is required to apply them. A saving of from 5 to 10 per cent, as compared with red lead paint, can thus be effected. Some concerns are using a combination of red lead and oxide and make good reports regarding it.

It appears to be a universal opinion that linseed oil is not a desirable material for the prime coating of metals when used without the addition of pigments. A foundation coat of linseed oil is very often the direct cause of peeling and blistering of the other several coatings applied over it.

Paints containing the same kinds of pigments as for shop coatings, can be successfully used for the first field coat, providing it is covered with another elastic outer coating. If that is not done, paints suitable for finishing coats should be applied, and the first field coat omitted. Red lead or oxide priming should be darkened for this coat by adding carbon or lampblack in the proportion of 90 to 95 per cent of the reds and 5 to 10 per cent of carbon mixed.

Carbon, lampblack and graphite pigments, singly or mixtures of them, have given best satisfaction as outer surface and finishing paints. These, combined with some inert and reinforcing pigments according to special formulas, form the basis for nearly every satisfactory brand of metal paint on the market. The addition of some high-grade gum like Kauri improves a finishing paint greatly, producing more elasticity, resistance and life. It is, of course, just as essential that the oils entering into the makeup and composition of the various paints are of the proper kind and quality, as that the selection and composition of pigments be properly made.

Paints containing tar, or those with a tar base, should not be used on steel structures exposed to the sun and weather, as tar-paint films rapidly check, crack and "alligator."

When for any reason it becomes necessary to repaint an iron or steel structure, the paint should never be applied in wet or freezing weather, and the surface should be freed absolutely from all scale, rust, dirt, etc. When for some reason it is not possible that the entire structure can receive

a coat of some rust-retarding primer, the parts cleaned and freed from rust, and all exposed surfaces, at least, should be touched up with either a red lead or oxide primer, before the finishing coat is given. The use of turpentine in the paint applied over the old surface is advised, as turpentine is a penetrant, provides the penetration and adhesion between the old paint film and the new coat.

Although more expensive, cleaning by sand blast is much more thorough than the hammer, chisel, scraper and wire brush method, and the greater cost is readily offset by better results in the end. The sand blast method thus far has not been very extensively used. Where the sand blast has been used and the steel has been painted promptly, it has not shown signs of corrosion again nearly as quickly as steel cleaned by hand.

Occasionally we notice defects showing up here and there on a steel structure within an unusually short time after the completion of the painting. We decide to visit the mill, and there we may notice in a remote part of the place a bunch of unskilled laborers mopping paint on some steel that had been sent along for priming, using large 6-inch or 8-inch flat brushes, and covering over all mill scale, rust, dirt and other imperfections, each and every one a destructive agent to the life of steel.

Next we pay attention to the paint they are using and learn that the package which was opened some time ago to be inspected and was left standing uncovered all this time, had contained the standard paint as specified, but now, through neglect is no longer fit for its purpose. On examining the contents of the package closely, we also notice that the paint is scarcely stirred up, and we see that the oily substance from the top of the mixture is first used, and as the work progresses and the material is consumed, the paint becomes heavier and intermixed with more or less pigment, until when the lower part of the package is reached nothing is left but a semi-dry pigment, which will no longer spread under the brush. Now, to assist in brushing, the men reach for the benzine can and reduce the paint with it, destroying what little life the paint had first contained. In this way a number of different surfaces and films are created on the same structure, and from the same package of the so-called protective coating.

The foregoing illustration may appear somewhat severely drawn, and the situation presented greatly exaggerated; nevertheless, if a number of troublesome cases were thoroughly sifted, the illustration, in part, or in whole, would be identical with the underlying causes of the trouble. No matter how diligent and untiring an inspector may be, it is not possible for him to be in a number of places at the same time, for, in large plants, where modern methods are pursued in the manufacture and assembling of steel, the various departments are sometimes miles apart.

* * *

Courses in Architecture

At a recent meeting of the Washington State Chapter, A. I. A., attention was called to the fact that the legislature is opposed to the duplication of the courses in architecture at the University of Washington and the State College at Pullman. A discussion followed as to the Chapter's attitude on the duplication of schools, and the purposes of the two institutions. Mr. Bebb moved, and it was voted, that a committee be appointed to draft resolutions supporting the location of the School of Architecture at the University rather than at the State College.

Experts' Report Shows Fire-resistive Value of Concrete

WITH Cass Gilbert, architect of international reputation, designer of Minnesota State Capitol at St. Paul and Woolworth building, New York, as chairman, the special committee of experts appointed by the American Concrete Institute, made a thorough investigation of the results of the fire at the Thomas A. Edison, Inc., plant at West Orange, N. J. The committee report stated in part:

The fire fully demonstrated the advantages of monolithic structures. The fact that at five different places several of the wall columns were rendered useless and yet the upper portions of the building stood intact, is evidence of the superior merits of concrete in monolithic construction.

Considering the extraordinary conditions surrounding this fire, the behavior of the concrete buildings was highly satisfactory and constitutes an excellent demonstration of the merits of concrete as a fire resisting building material. It is not so surprising that the concrete buildings were damaged as that any material should have so satisfactorily withstood these unusual conditions.

The end walls in the three upper floors of two buildings extended above the roofs of the adjoining buildings, which were completely destroyed; while this was in the hottest part of the fire, the walls were practically undamaged and are an admirable demonstration of the value of concrete walls as a fire barrier.

The fused metal found in different parts of reinforced concrete buildings would seem to indicate that the fire reached an intensity of 1000 degrees F. in all these buildings, and in many cases as high as 2000 degrees F.

In the greatest portion of these buildings the concrete remained firm and hard and intact after this severe heat treatment.

The net loss in the concrete buildings is plainly stated in a paragraph from one of Thomas A. Edison's letters:

"The report of our engineers shows that 87 per cent of the reinforced concrete buildings, which were subjected to a very intense heat, are in good condition, and of the machinery which they contain about 85 per cent can be used, with small repairs. Buildings of other materials, together with contents, were entirely destroyed."

* * *

Russian Architecture

IN the field of architecture Russia has displayed real originality and can point in the churches of her ancient towns and of various remote villages to a number of masterpieces. There have been relapses and breaches of continuity here, too, but the interruptions in development have not been so serious and have not had such lasting effects as has been the case in painting," writes H. W. Williams in "Russia of the Russians."

"There is a distinct affinity between certain phases of ancient and certain phases of modern Russian architecture, an affinity independent of any desire to imitate. Perhaps this comparative consistency in architectural development is due to the fact that natural features, scenery, landscape, exercise a more directly determinative influence upon architecture than upon the other arts. Russian architecture at its best does harmonize in the most striking manner with the Russian landscape. There are no bold crags crowned by beetling fortresses. The Kreml, the burg or citadel of the older Russian towns, is usually situated on a mount or, at the most, a hill of no great height, and does not stand out aggressively from its natural settling of river and plain. And even where citadels occupy an elevated and conspicuous position, as in Kiev and in Nizhni-Novgorod, they do not challenge, as the traveler approaches them from the river; they rather delight by their picturesqueness, and the domination they express over the surrouding plain seems to be rather contemplative than militant.

"Practically all that is left of ancient Russian architecture," continues Dr. Williams, "is its churches. But there are many of these, and they are splendid monuments to the genius of their builders. Byzantine models were soon adapted to Russian taste, and it is remarkable that this nationalization of ecclesiastical architecture by the Russians of the eleventh and twelfth centuries did not lead to degeneration. In fact, judging by the severity of taste displayed in the older churches of Novgorod, the Russians of that period, at any rate in Novgorod, were by no means such barbarians as they are commonly considered to have been. It was in Novgorod that the Russians began to build after their own mind, and the Novgorod of today with its scores of white churches by river and lakeside is a veritable museum of Russian ecclesiastical architecture."

* * *

Prize-Winning Design for Neighborhood Center

THE recent competition conducted by the City Club of Chicago for a Neighborhood Center scheme, resulted in a California competitor receiving one of the prizes. A plan for a Social and Educational Center at Pasadena was prepared by Dean George A. Damon of Throop College of Technology, with the assistance of Walter L. Newton, a graduate of Throop college. The preliminary plans in this competition were submitted last November. At that time each competitor presented only a general plan and those remaining after the elimination were permitted to submit birds-eye views of the buildings planned and sketches showing the type of architecture used. The final awards made on February 23d resulted in an equal division of the money prizes among eight competitors, of whom Dean Damon was one.

The competition was not confined to a set problem, although certain conditions were imposed and plans were admitted for neighborhood centers planned for any other city than Chicago and for civic centers for cities not large enough to justify important neighborhood centers. The object of the competition as announced by the Chicago City Club was "to bring before the public in graphic form the practical possibilities of enhancing neighborhood life in our cities by better and especially by better grouped buildings and grounds for community activities." Dean Damon in explaining his proposed plan to the Woman's Civic League of Pasadena, said in part:

"It is most important that we all understand that the proposed plan is entirely preliminary. Personally I hope that the plans as now shown will never be carried out, for we certainly can and should do much better. But no improvement of this kind can ever be evolved without a vast amount of preliminary study, and so this sketch is intended only as an effort to discover our possibilities.

"The whole conception of the plan is based upon the fundamental idea of removing the Santa Fe tracks from the center of the city. At the present time these railroad tracks are a distinct blight upon a large section of the downtown district which is contiguous to a very desirable part of our business center."

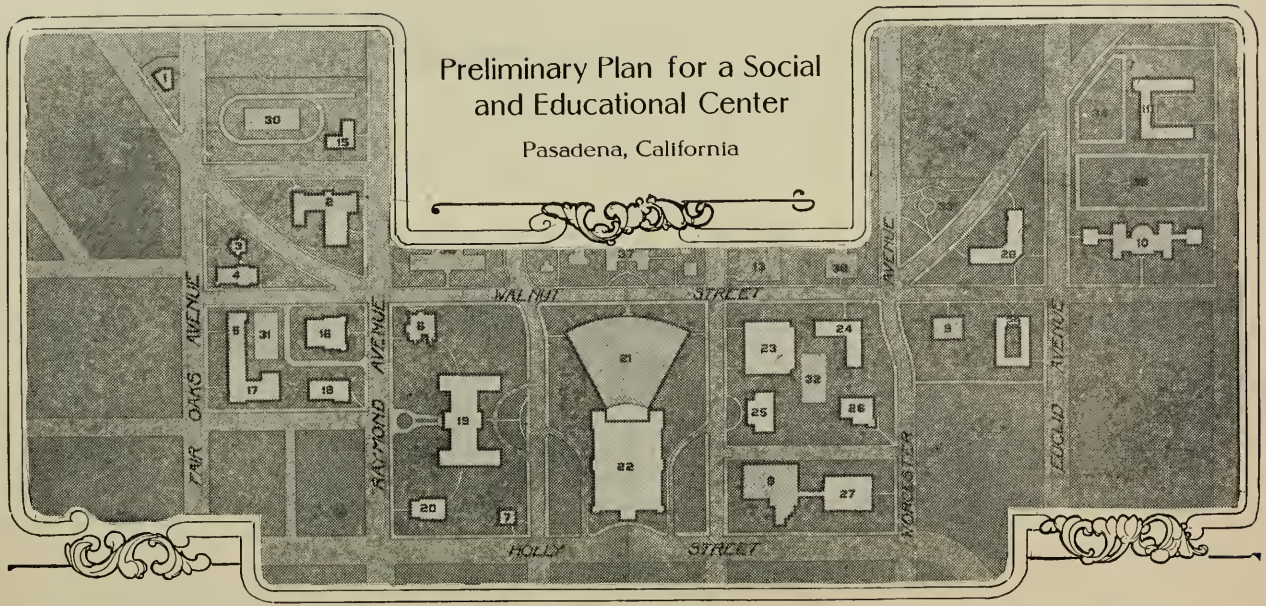
* * *

The Twenty-eighth Chicago Architectural Exhibition

The Annual 1915 Exhibition of the Chicago Architectural Club, the Illinois Chapter American Institute of Architects, and the Illinois Society of Architects, is being held in the Art Institute of Chicago this month. The Illinois Chapter has established a Gold Medal of Honor, open to competition by architects maintaining an office in the State of Illinois.

Preliminary Plan for a Social and Educational Center

Pasadena, California



PRESENT BUILDINGS

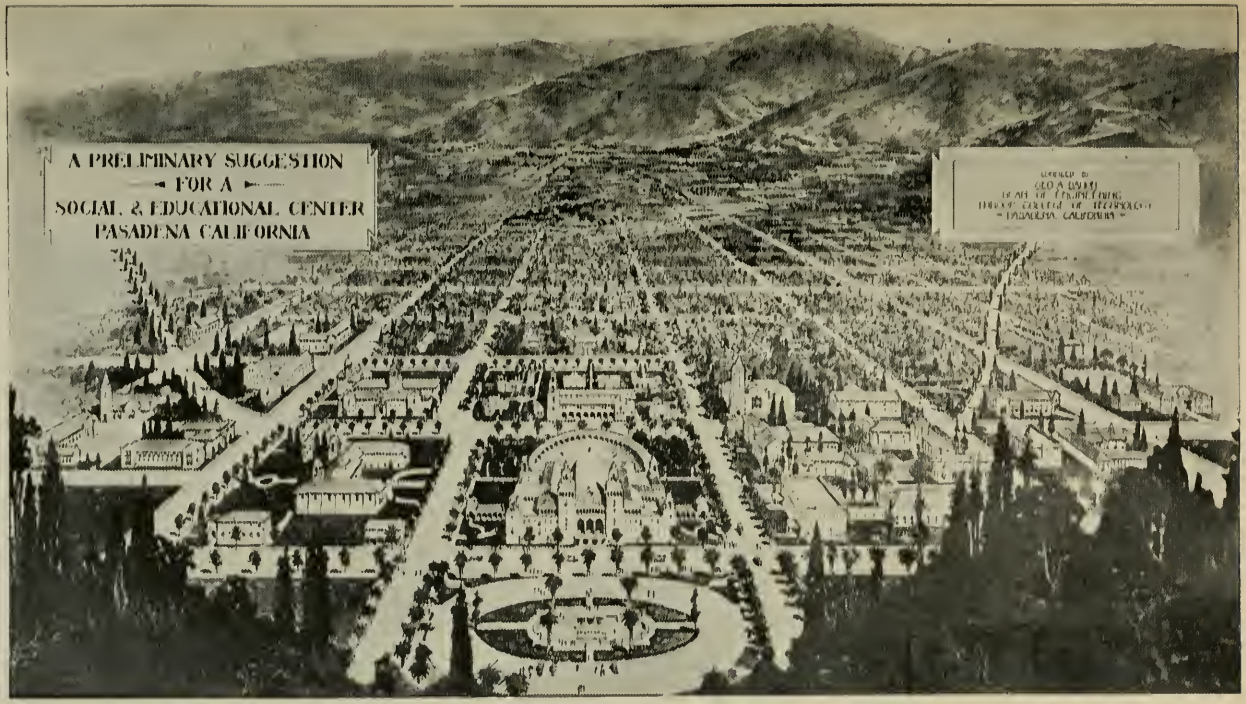
1. Art Gallery.
2. Art Studios.
3-4. Catholic Church.
5. Catholic School.
6. Historical Museum.
7. Rest Room.
8. Y. M. C. A.

PROPOSED BUILDINGS

9. Central School Offices.
10. Intermediate School.
15. Clubhouse for Playground.
16. Labor Temple.
11. Vocational School.
12. Church.
13. Church.
17-18. Catholic School.
19. Library.
20. Horticultural Exhibit.
21. Open-Air Stadium.
22. Auditorium and Opera House.
23. Y. W. C. A.
24. Music Conservatory.
25. Day Nursery.
26. Dancing Academy.
27. Y. M. C. A. Gymnasium and Swimming Pool.
28. Grammar School.
29. Kindergarten.

OTHER FEATURES

30. Public Playground.
31. School Playground.
32. Y. W. C. A. Tennis Courts, etc.
33. School Gardens.
34-35. School Playgrounds.
36. Apartment House.
37. Hotel and Bungalows.
38. Business College.



PRELIMINARY STUDY FOR A PASADENA NEIGHBORHOOD CENTER BY DEAN DAMON OF THROOP COLLEGE OF TECHNOLOGY AWARDED A PRIZE IN NEIGHBORHOOD CENTER COMPETITION HELD UNDER THE AUSPICES OF THE CHICAGO CIVIC CLUB

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WHY NO ARCHITECTURAL DISPLAY AT THE FAIR?

Why is there no architectural exhibit at the Panama-Pacific Exposition? Is it because there is so much good architecture on the outside that the Exposition company deemed it unnecessary to repeat by providing for further architectural display within? What a pity that beautiful Fine Arts building could not have been made the center of a select collection of architectural triumphs of world-wide repute! Somebody has dared to proclaim that architecture is not a fine art and, therefore, that it has no place in a Fine Arts building. Nonsense. The architect who conceives and is able to put that conception upon paper or board for the inspection of his fellow men, is accomplishing as much as the artist whose brush and palette transforms a cold piece of canvas into a glorious painting. Yet the Exposition company has decreed that architecture is not an art and now, if the architects of California would prove to the world to the contrary, they must provide independent means of exhibiting their work. Thanks to the Pacific Coast Architectural League, the San Francisco Architectural Club and others interested in the success of the profession, an architectural exhibition will be held in San Francisco during the convention in June of the American Institute of Architects. We are sure it will be a success, for we know there is abundant material from which competent judges should have no difficulty making some splendid selections.

But what a pity this exhibition could not have been planned and executed in the Fine Arts building—the very place of all places that should shelter this collection of treasures—within the walls of the wondrous palace that was conceived by one of our own! When one thinks of what the architects have done to make the Exposition the dream that it is, it seems difficult to appreciate the lack of wisdom that appears to have been displayed by some one in denying the profession an honor, or even courtesy, to which it is justly entitled.

THE ARCHITECT AND THE ARTIST

"You cannot have an architect and an artist in one," remarks an eastern journal, commenting on a recent Canadian decision that followed a suit against an architect-artist who proved a wonderful scholar in things aesthetic, but a sadly deficient fellow in matters practical.

The above quotation may be true, generally speaking, but it is only fair to say that there are exceptions. Willis Polk, for example, is an artist of admitted ability—and so is Louis C. Mullgardt, and what is more, they are both practical architects whose professional competency is unquestioned.

It is true, however, that the profession has in its ranks many of the so-called "artist" type, who are woefully lacking in ability to work out their creations. We have in mind a San Francisco architect whose work as a designer has created world-wide recognition. Yet when it comes to the practical or detailed part of his conceptions he is "all at sea," as one architect put it, and a corps of trained men must be employed to "work out" his dreams.

Courts should not be too severe in condemning the architect-artist, for we owe much to both, and it is not reasonable to expect to find in every member of the profession a combination of the fine qualities that go to make both the architect and the artist. If he is a good artist his shortcomings as an architect should be in a measure at least, overlooked, and the same consideration should be shown a good architect who lacks the exceptional artistic temperament.

CITY PLANNING AND HOUSING

The simplest and one of the most straightforward statements about what City Planning is, and how to go about it, has just been issued by the Massachusetts State Homestead Commission, which is perhaps doing the foremost constructive work in City Planning in this country.

In the short two years of its existence it has so justified itself that bills have been introduced this year into the Legislatures of California and many other states to establish similar commissions to supervise the important work of real City Planning boards. Certainly the California Legislature could put no more constructive Act on the statutes than to provide such assistance to the eradication of tenements and slums, which haphazard and unguided development have allowed to grow up.

It is surprising that while in every other realm of human activity all undertakings are carried on in accordance with carefully considered plans made in advance, in the building of cities and towns, which are the homes of thousands or millions, there is little or no forethought, design, or previous plan. The results are what might be expected, and are to be seen in the unhealthful, unsightly, inconvenient areas that abound in all cities and towns. The world is just awakening to the folly of such a course, and Massachusetts by the appointment of its mandatory planning boards has taken the lead on this continent in directing a wholesome development of its cities and towns.

Architectural Club Exhibit

The San Francisco Architectural Club is preparing for its seventh Architectural Exhibition, which will be held in San Francisco June 7th to 21st inclusive.

The exhibition will be illustrative of architecture and the allied fine arts. It will consist of drawings and models of proposed or executed work in structural, decorative and landscape architecture; sketches and finished examples of decorative and monumental sculpture, and photographs of executed work.

G. A. Lansburgh to Design Theatre

Architect G. A. Lansburgh, Gunst building, San Francisco, has been commissioned to prepare plans for a new Orpheum Theatre building at St. Louis, Missouri. The working plans have just been started. Construction will be Class "A," with steel frame, concrete walls, and exterior of pressed brick and terra cotta. The building will seat about 2,200 persons, and will cost upwards of $400 000. Mr. Lansburgh recently completed an Orpheum Theatre at Kansas City, Mo.

Utah Postoffice Building

Bids will be received up to May 13th by the Supervising Architect, Washington, D. C., for the construction of a one-story and basement brick and stone postoffice building at Park City, Utah.

With the Architects and Engineers

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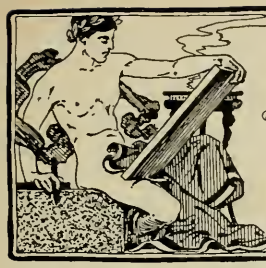
Arts School to Build

It is stated that the Lick School of Mechanical Arts at Sixteenth and Utah streets, San Francisco, is planning the construction of a new building to cost in the neighborhood of $70,000. The plans will be prepared by W. C. Hays, of San Francisco.

Club Building

San Anselmo is to have a club building to cost $15,000. The building committee has been appointed, consisting of Aug. Lang, A. S. Foote, R. A. Carey, I. J. Hall, and A. W. Studley.



San Francisco Society of Architects

Regular Meetings Second Wednesday of Each Month

PRESIDENT - - - - - JOHN BAKEWELL, JR.
VICE-PRESIDENT - - - - CHARLES PETER WEEKS
SECRETARY AND TREASURER - - - WILLIAM OTIS RAIGUEL
DIRECTORS - - JOHN GALEN HOWARD and LOUIS C. MULLGARDT

COMMITTEES:—

Membership—WM. C. HAYS, FRED'K H. MEYER, and GEO. W. KELHAM.
Architectural Practice—JOHN GALEN HOWARD, CLARENCE R. WARD, and HOUGHTON SAWYER.
Entertainment and Program—LOUIS C. MULLGARDT, CHAS. P. WEEKS, and LOUIS P. HOBART.
Allied Arts—LORING P. RIXFORD, J. HARRY BLOHME, and WARREN C. PERRY.
Publicity—WM. OTIS RAIGUEL, JOHN J. DONOVAN, and E. COXHEAD.
Education—BERNARD R. MAYBECK, ARTHUR BROWN, JR., and JOHN BAUR.
Competitions—CHAS. P. WEEKS, WM. C. HAYS, and JOHN REID, JR.

Public Interested in School Architecture

Although several hundred extra copies of the March issue of the Architect and Engineer were printed, the entire edition was exhausted within a few days after publication. From the interest shown it is evident the type of school building adopted in Oakland meets with general favor, or it may be the novelty of the one-story semi-open air structure has aroused the curiosity of municipal bodies and educators to the extent that they seem unable to obtain too much information on the subject. Some more fine examples of California school houses are planned for readers of this magazine, including the work of William H. Weeks of San Francisco, which will be shown in the May number. In June or July the school buildings in Southern California, designed by Architects Allison & Allison, of Los Angeles, will be shown.

Competition for Municipal Hospital Wing

The Consulting Board of Architects of the City of San Francisco, consisting of Messrs. John G. Howard, Frederick H. Meyer, and John Reid. Jr., have completed the programme for an architectural competition for plans for the southeast wing of the San Francisco City and County Hospital. The building will be known as the Tubercular Ward and will cost approximately $400,000. The Consulting Board has selected seventeen San Francisco architects to compete for the prize-winning design. Practically all of these architects have had more or less experience in hospital work. The winner will receive as compensation 6 per cent of the total cost of the work. There will be no other prizes offered.

The judges will be Miss Julia Morgan, Chas. S. Kaiser and Dr. R. G. Broderick. The competition will close May 31st, and the award will be made on or before June 14th. Each competitor will be required to execute his work in one-eighth inch scale lead pencil drawing, and he will be required to have a plan of each floor, roof plan, section and north, south, east and west elevations. Following is a list of the competitors, arranged in alphabetical order:

Bakewell & Browne.
John Baur, Jr.
Herman Barth.
L. B. Dutton.
W. C. Hays.
August G. Headman.
Louis P. Hobart.
George W. Kelham.
Julius Krafft & Sons.
Henry H. Meyers.
B. R. Maybeck.
Louis C. Mullgardt.
Wm. Newman.
Perseo Righetti.
Houghton Sawyer.
Ward & Blohme.
Chas. Peter Weeks.

Nebraska Architects for Nebraska Buildings

After a lively controversy by members of a committee of the Nebraska state senate the Bedford bill (S. F. 255) was recommended for passage. It requires the university regents and state board of control to engage Nebraska architects only. Action was precipitated largely by regents giving a $130,000 building to an outside architect. An interesting argument was offered by a member, who is quoted as saying: The president of the National Association of Architects lived in Omaha and that architects have a uniform scale of prices and therefore nothing could be gained by going out of the state. Two members said the field should be left open to all, but the open-door policy was unpopular. One senator said Republicans should take their own protection medicine and support the bill.—Improvement Bulletin.

Build Now!

(From Brick and Clay Record)

"Build Now." It is the slogan of the building material manufacturers of the country, From New York to San Francisco, from Seattle to Miami, the call is being heard. It is being taken up by contractors and architects and owners are giving heed to the admonition. It is a fitting prefix to the brick makers' propoganda, "Build with Brick."

"Build Now" and "Build with Brick" make a trade getting couplet that is bound to bring business to the clay working industry. Already the signs are apparent. Starting in Boston, taken up in New York, passed on to the Twin Cities, re-echoed in Chicago and hurled back upon the mountainous West by the responsive Pacific Coast cities, there is a turning tide in the affairs of the building world that, while only feebly apparent in spots today is nevertheless resplendent with promise.

Bradstreet's summary gives the facts. With only ninety-nine cities reporting up to February 5th, the country's total building plans are shown to be only six per cent behind those reported for the same number of cities in January, 1914. December showed a shortage of twenty-five and seven-tenths per cent. New York's two largest boroughs alone showed a gain in January of $4 448,000, or seventy-six per cent over January, 1914.

From the same source, that is, Bradstreet's, the following classification is taken.

	No. of Cities	Number 1915	Permits 1914
New England	15	489	503
Middle	20	2,109	1,990
Western	15	1,329	1,703
Northwestern	15	872	1,214
Southwestern	10	882	1,444
Southern	17	1,220	1,731
Far Western	7	589	716
Total U. S.	99	7,490	9,301
		Values 1915	Values 1914
New England		$1,170.161	$2,165,535
Middle		13,720,425	9,870,830
Western		3,655,863	5,429,296
Northwestern		5,926,307	6,971,120
Southwestern		1,910,500	2,411,469
Southern		1,516,295	2,535,922
Far Western		752,616	1,009,946
Total U. S.		$28,554,167	$30,394,118

In January last year there was no war, no stringency in money as compared with the tightness of money at the opening of 1915, and there was more general prosperity. Mills were running at fuller capacity. The United States Steel Corporation had sixty-four per cent of its capacity in operation. It opened January, 1915, with only forty-five per cent blown in. It now has fifty-five per cent employed. The same is true in other industries. Yet, despite the handicap of 1915, we find that instead of one hundred and forty-six cities reporting a grand total of $45,999,862, ninety-nine cities—a deficiency of forty-seven communities—show a total of $28,554 167, or a loss of $17,438,695. In other words, with a falling off in volume of 47.4 the decrease in estimated value was sixty-two per cent. This leaves only 14.6 to be accounted for by belated returns.

Jean Louis Bourgeois

The death of Jean Louis Bourgeois, formerly with Bakewell & Brown, the San Francisco architects, came as a severe blow to the young artist's many California friends. Bourgeois was killed on February 26th fighting for his native country in France. He left his work in San Francisco and enlisted in the French army soon after the beginning of European hostilities.

Bourgeois endeared himself to the younger draughtsmen with whom he came in contact. He had the rare faculty of inspiring them with interest in their work, and his own remarkable draughtsmanship gave him great prestige with the students. He was associated for some time with Mr. Arthur Brown as one of the patrons of the Atelier Brown and Bourgeois.

Bourgeois was born at Autun, France, in 1876. He was a pupil of Moyaux and Laloux at the Ecole des Beaux Arts, Paris, where he had a brillian academic career. He was appointed Government Architect by the Shah of Persia, where he worked from 1906 to 1908. He went to San Francisco in 1908, leaving to join the designing force of D. H. Burnham & Co., Chicago. He returned to San Francisco in 1912 to assist Messrs. Bakewell & Brown in the working out of the designs for the Horticultural Building at the Exposition and the San Francisco City Hall.

Bourgeois was an artist of great talent and remarkable taste. He was largely responsible for the final designs of the Horticultural Building at the Panama-Pacific Exposition, while many of the most beautiful details of the City Hall were the product of his imagination.

Sudden Death of Mr. T. P. Jarvis

The building trade was shocked to hear of the death of T. P. Jarvis, founder of the Jarvis Oil Burner Company, which occurred very suddenly at his home in San Francisco on April 5th. Mr. Jarvis was well known throughout the Coast and his death is mourned by a wide circle of friends. He was a member of many secret and benevolent societies, including the Masons, Odd Fellows and Woodmen of the World. He is survived by a widow, two daughters and a son. The business of the Jarvis Oil Burner Company will be continued by Mrs. Jarvis and the son, Ellwood H. Jarvis.

Ohio Architect Advises Radical Change

A radical change in the regulations pertaining to foundation construction may take place in the State of Ohio, should the plan of A. O. Elzner, President of the Cincinnati Chapter of the American Institute of Architects and Chairman of the Ohio Committee on the revision of the general building code, be adopted.

Mr. Elzner, who is a member of the architectural firm of Elzner & Anderson, has suggested to the Ohio Building Code Commissioners that the responsibility of putting in a foundation be placed upon the owner and not on the adjoining holders of property. He and some of his associates are of the opinion that the care should not be put upon the man who built years ago and that it should be concentrated upon one person. Frequently there are cases, Mr. Elzner stated, where a man had no need for a nine-foot foundation, and because of his having put one in of lesser depth the architect saw no reason why an adjoining owner should compel the holder of the older improvement to go to expense in protecting his property.

Twin Peaks Tunnel Work

Cement guns have been installed at the westerly portal of Twin Peaks tunnel, and the work of encasing the framework for a distance of more than 500 feet from the portal is well under way. The contractors will now commence taking out the core.

Cement will be one of the big items in the construction of the 12,000-foot suburban tunnel. It is estimated that more than 100,000 barrels will be required. More than 2500 tons of reinforcing steel will be used. Something over 100,000 cubic yards of rock and sand will be necessary for the work.

Work is already progressing on the Laguna Honda station in Forest Hill. This station will cost about $250,000.

March Meeting of San Francisco Chapter

The regular meeting of San Francisco Chapter, A. I. A., was held March 18th, at the Tait-Zinkand cafe. Edgar A. Mathews presided in the absence of President W. B. Faville. Mr. Mathews gave a summary of the work of the Legislative Committee and the meeting then adjourned, reading of the minutes and communications being deferred until the next meeting.

Personal

The engagement has been announced in San Francisco society circles of Miss Gwendolyn B. Powers and George Adrian Applegarth, architect, with offices in the Claus Spreckels building, San Francisco.

Honor for Men Who Built Exposition

On Saturday, April 10th the directors of the Panama-Pacific Exposition showed their appreciation of the efforts of those who are directly responsible for the many wonders of Jewel City by designating it Builders' Day.

On that day the contractors and the workmen, who with their own hands gave to the world the greatest show it has ever been privileged to witness, were the guests of the Exposition officials, and each was presented with a token in recognition of his services in making possible the huge project.

An elaborate program was carried out, the main feature being the presentation of medals and badges to the contractors and workmen.

The following contractors and contracting firms received silver medals: Strehlow, Freese & Petersen; Lange & Bergstrom, Reese & Rountree, McLeran & Petersen, W. A. Anderson & Co., John Monk, J. D. Hannah, Neal A. McLean, McSheehy Bros., Commary-Petersen Co., Inc.; F. Rolandi, Dyer Brothers and the Western Building and Engineering Company.

Four Branch Libraries

Oakland will have four branch Carnegie libraries and the plans for one have already been approved by Mr. Carnegie and returned to the Library Trustees with authority to let contracts for immediate construction. The building will be located at Melrose and will cost approximately $35,000. William H. Weeks of San Francisco is the architect.

Architects for the three other buildings will be selected shortly. It is said they will be C. W. Dickey, J. J. Donovan and Walter Reed.

Berkeley Architect Busy

Architect F. Holberg Reimers of 2125 Shattuck avenue, Berkeley, reports quite a little work in prospect in his office. The list includes a $6,000 frame and plaster edifice for the Colored M. E. Church of Berkeley; a $4,000 house for Mrs. Julia Jordan; plan for the Hayward Heath Municipal Center; $7,000 residence in San Francisco for A. McEwen, and a residence to be built for sale on the Maybeck property, Berkeley.

Residence Contracts Awarded

Architect Smith O'Brien of San Francisco has awarded contracts for the construction of a two-story and basement frame dwelling to cost about $10,000, on Octavia street, between Vallejo and Broadway, San Francisco, for Mrs. Allason Weeks.

Meeting of Chapter and State Boards of Architecture

The April meeting of San Francisco Chapter, A. I. A., was held on the 13th and the Chapter entertained as its guests members of the Southern California State Board of Architecture, as well as the members of the Northern District board. The Southern District is composed of John P. Krempel, president; Fred H. Roehrig, secretary-treasurer; Octavius Morgan, Sumner P. Hunt and William S. Hebbard, members. Problems of the two boards were gone over and there was a general discussion of matters interesting to the architectural profession.

By All Means, Yes

Editor The Architect and Engineer:—

To settle a question between a friend and myself will you kindly answer through the columns of your magazine, or such way as you prefer, the following question:

If an advertisement is published for "plans and specifications in detail," would an architect be expected to furnish working details?

Yours very truly,
C. A. PERRY.

Artist and Designer Dead

A. Moretti, artist and designer of altars and artistic memorials, and one of the best known men in his line in California, died after a thirty-eight years' residence in San Francisco.

One of the last works executed by him was the beautiful chapel in Holy Cross Cemetery, decorated in Romanesque style, and done under the direction of the late Archbishop Riordan, an admirer of Moretti's work.

New Use for Cement

It is certainly wonderful to dwell on the multifarious use of cement, but here is a new source of consumption. A couple of days before the eighth annual Cement Show at the Coliseum, Chicago, came to an end an order came in over the telephone from a party for two pounds of cement, explaining that he required the material to fix his horse's teeth, which presumably had become loosened in some manner.

Salt Lake Depot

Officials of the Salt Lake railway in Los Angeles have tentative plans for the proposed new passenger station, south of Seventh street, on the east bank of the Los Angeles river. The depot will be of reinforced concrete construction and will cost about $260 000. The structure will be two stories, 90x162 feet, and designed for future additions. Architects Hunt & Burns, Laughlin building, Los Angeles, have prepared sketches for the building.

Electricity in the Home Aids Renter

A Chicago realty firm has recently wired all the houses which they rent.

Six months ago the manager of this concern investigated the advantages of electricity in the home. He was convinced that the economy, due to the fact that wall paper would not have to be cleaned or furnished as often, would soon offset the expense, incident to wiring.

Enough time has not elapsed to definitely settle this question, but the realty firm makes the statement that they have noticed that it is much easier to rent the houses than before.

In one instance, where a house was sold, they were able to obtain two hundred dollars more than previously asked whereas their wiring expenses, including fixtures, were only ninety-five dollars.

Berkeley Store Building

Plans have been prepared by Architect James W. Plachek of Berkeley for a one-story steel frame Class C store building, to be built adjoining the Acheson building on University avenue, Berkeley. The building will cost $30,000 and will be occupied by the Sill Hardware Company. Architect Plachek has moved to larger quarters in the Acheson building. He has close to $100,000 worth of work under way and in prospect.

To Practice Architecture

The following have been granted certificates to practice architecture in this state:

Adams, George J., 2210 Durant avenue, Berkeley; Bridgman, Miss L. B., 1270 Guerrero street, San Francisco; Mayo, Frank V., 531 I street, Sacramento; Siebrand, Carl, Arcade building, Seattle, Wash.; Wilkinson, W. J., 449 Vista Valle avenue, Oakland.

Berkeley Architect's Work Displayed

Architect Eugene K. Martin, of Berkeley, is preparing plans for a chapel to be erected for the Methodist Episcopal church at Berkeley. Mr. Martin has recently placed on display in the office of W. J. Mortimer, Hotel Shattuck building, Berkeley, drawings of some of his recent work. Mr. Martin was formerly in the office of Architects Bakewell & Brown and Bernard Maybeck, San Francisco.

Don't Want the Cement Container Bill

The proposed cement container bill has been defeated in the California assembly after a strenuous contest. The bill would seriously interfere with the cement industry in the state by imposing a considerable burden upon the manufacturers. A similar bill is pending in the Senate.

Review of Recent Books

of Interest to the

Architectural and Engineering Professions

By CHARLES HENRY CHENEY

THE MINISTRY OF ART. By Ralph Adams Cram.

Masters of art are rare. Their ministry, except in the exercise of their profession, to the sane art education of the public is rarer still. Most of the architects whom we call great in America—and Mr. Cram is surely one of them—have failed to write for us in simple or clear expression of their cultural influences, motives, instincts and conclusions. Whether the language of Art for them was limited to drawings and buildings of stone and bricks and plaster, or Mr. Cram's delightful sense of humor and rich expression in words is an added unusual gift, makes little difference. The enjoyment of his essays is certain whether we agree with him entirely or not. His wide range of expression tantalizes the soul with inspiring contrast of ideas, quotations from history, science and religion, so subtle and yet so vigorous as to command sure admiration. The reader, whether artist or layman, must receive an agreeable stimulus to thought from this book.

Published by Houghton-Mifflin Co., Boston, 1914. $1.50 net.

WIDTH AND ARRANGEMENT OF STREETS. By Charles Mulford Robinson.

City Planning and Housing studies and a large part of our municipal engineering have direct bearing on the subject matter of this volume. Mr. Robinson's long years of observation of municipal problems have made him unusually well qualified to speak on the improvement of streets. His simple common sense statements are based on convincing facts and the illustrations are drawn from a wide area. This is by far the most practical and convincing book on the subject yet published in this country. With the awakening of civic conscientiousness all up and down the Coast such a straightforward treatise will be found useful to architects, engineers and city officials in proving their arguments.

Published by the McGraw-Hill Book Co., New York. 202 pages, 49 illustrations. $2.00 net.

WHO BUILT THE PANAMA CANAL? By W. Leon Pepperman. Illustrated by Joseph Pennell.

In celebrating the completion of the epoch-making Panama Canal, we are somewhat apt to heap our praises entirely upon Colonel Goethals and the army engineers who so ably carried through the final construction. Yet as Mr. Pepperman points out, the three controlling factors in the construction of the waterway across the isthmus of Panama were the French, Theodore Roosevelt and the railroad men. This book gives the real story of the triumph of the engineering profession. How special machinery was devised, perfect sanitation created, where the steady labor supply came from and other practical things are told by a man who was a member of the administration of the Isthmian Canal Commission. Mr. Pennell's remarkable drawings lend an added value to an interesting volume.

Published by E. P. Dutton & Co., New York. 419 pages, 27 illustrations, 4 maps. $2.00 net.

ARTIST AND PUBLIC. By Kenyon Cox.

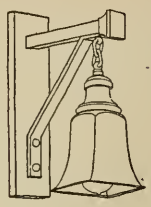
Is the modern artist isolated? Why should there be such a lack of sympathy and understanding between the artist and his public? In this group of essays Mr. Cox gives us insight into the development of modern art standards. The essays on Millet and Raphael, which are illustrated by reproductions of the best examples of their work, contrast the classic with the modern point of view and, as Mr. Cox points out, "are capital instances of the happy productiveness of an artist in sympathy with his public or of the difficulties nobly conquered, in this case, of an artist without public appreciation." The essay on St. Gaudens is a warm appreciation of a man whom the author knew and loved.

Published by Charles Scribners Sons, New York. 228 pages, 32 illustrations. $1.50 net.

CONCRETE STONE MANUFACTURE. By Harvey Whipple.

The development of concrete building units, their location, equipment, layout; materials, mixtures and manipulation; curing, special moulds and patterns, surfaces; shop records and building regulations, selling the products, and examples of layout and operation, form a most valuable little handbook on a new subject. The illustrations are well chosen to make this first comprehensive work in eight years a distinct record of progress, and a guide book for concrete block making.

Published by Concrete Cement Age. Detroit, 1915. 255 pages. Soft leather, $1.00 net.



Heating and Lighting

Plumbing and Electrical Work

Edited By CHARLES W. FORTUNE

Natural and Mechanical Ventilation*

By CHAS. W. FORTUNE

ANY mode of ventilation, depending upon natural resources, is, and has been proven to be inadequate, to produce purified conditions in any room occupied by many persons, or used for the manufacture of any materials, more or less injurious, to health.

A natural ventilation means the charging of air by natural means. If in a climate where the windows cannot be opened, the change must be made through a flue, and the flow of air in this flue must depend upon the difference in temperature between the inside and outside of this flue, and this difference is again dependent upon atmospheric conditions, such as a warm outside air nearing the temperature of the room, outside humidity, causing a high atmospheric pressure, and farther, adverse wind charges, although this latter may have the slightest effect of any provided the flue opening to the atmosphere be not so located that the wind will blow down the same. If this last condition did not prevail, a slight vacuum may be caused in the flue, which would cause an upward flow of air, producing perhaps the best natural obtainable flow. If the room to be ventilated is used for some manufacturing purpose, where perhaps some fumes may be produced that must be carried out at a rapid rate, any natural means for accomplishing these results, must be a poor makeshift for a ventilation system.

If the ventilation is supposed to be accomplished by the opening of the windows, good results may be obtained when the weather is such as to produce no ill effect from such a system, such as drafts, which may be injurious to the occupants or counteracting to any of the work carried on in the room.

While a natural mode of ventilation may be the most economical one to install, it may be the most expensive one to operate. In a climate where heating has to be accomplished all the time the room is being occupied, the room to be ventilated to purify must be done from the bottom, which, owing to aforesaid reasons would be inadequate, and if ventilated from the top must be done from or at the ceiling, where the purest warm air is likely to be, which would be discharged to the atmosphere, leaving a partial vacuum to be filled by the heavy foul air? No, but by pure warm air leaving the vitiated air at or near the floor line, hence pouring the purest warm air to the atmosphere, carrying with it the heat units, that have been added to it by some money-spending system, to produce comfort to the occupants of the room.

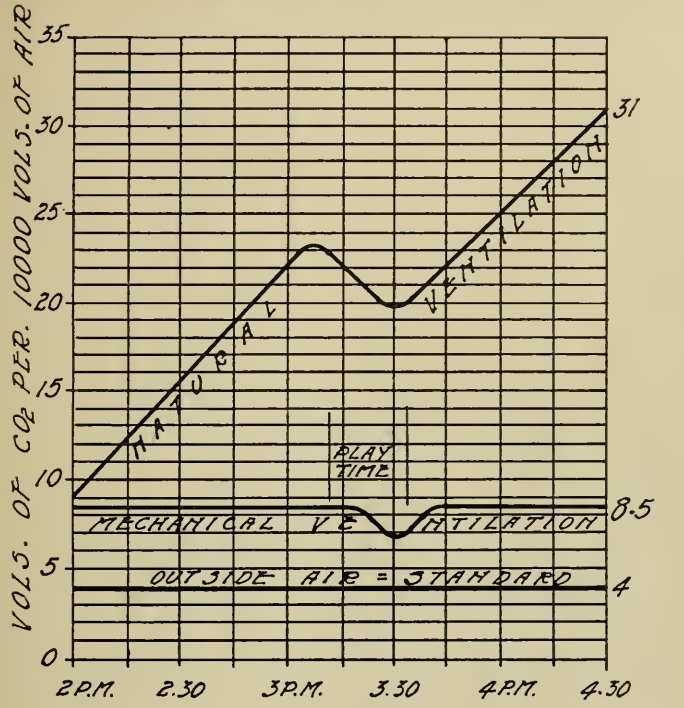
While in any system of ventilation some losses must occur, the losses should be minimized, and the best possible results obtained, while the air is being changed, but any mode or system depending upon natural means cannot be anything but unsuccessful where all conditions of weather are to be considered. If there should occur only a few days, when natural means would not accomplish the required results, those few days would be the ones to mar the whole system and cause its inefficiency to be most pronounced.

A mechanical ventilating system is one depending in no way whatever upon, or affected in no manner by atmospheric condition. This is equally true whether the air is forced into or exhausted from the room or building. The most efficient system being one where both supply and exhaust are used in conjunction with one another.

The most common system in use is the one employed in most school buildings, and one with which good results are obtained, by using a fan of the centrifugal type to force the air into the rooms. With vent flues designed to remove an equal amount of vitiated air, at a low velocity, so as not to put any back pressure upon the incoming air velocity. These vent flues open into the attic space, from which the air is discharged to the atmosphere through louvered opening in the walls or gables.

An installation of this type properly designed and installed and with sufficient capacity to supply the proper amount of air to each room or apartment, should prove to be an ideal system and one that

* Heating and Ventilating Engineer, Los Angeles.



VENTILATION CURVES

would meet all that could be desired in a ventilating system, and for all seasons of the year.

The idea of sufficient vent flues is not only to have sufficient area to discharge an equal amount of air as admitted as to have area to carry out an amount sufficient to maintain as standard of purity within the room.

This standard of purity depending on the amount of carbon dioxide (CO_2) contained in each 10,000 cubic feet of air, which according to all standard authority should be as near that of the outside as is possible, which should be on an average of four (4) parts of (CO_2) per 10,000 cubic feet of air.

While it has so far not been possible to meet this standard, we are nearing it, as will be readily seen from the accompanying chart, plotted from 250 tests, made in several schools in England.

The marked difference between a natural and mechanical ventilation is shown so pronounced that there is hardly any need for an explanation.

The drop in the percentage of (CO_2), during recess or play time proves the efficiency of the mechanical system, all through in the natural ventilated course, there is approximately a greater drop owing, likely, to the opening of all windows, when the pupils were out of the building, which must have necessitated a great heat loss.

Our present successes, and those which we hope to have in the future may surpass these, have not been, and cannot be attained by regarding the subject from a monetary consideration.

They have resulted in the past from thought and study actuated by desire for those direct benefits to the community generally, which are the best rewards for all the care and labor that can be bestowed.

New Book Received

The Sundayschool Building and its Equipment. By Herbert Francis Evans. 75c. net. (Review later.)

Electric Heating in Seattle

DURING the past two years several experiments have been carried on by the lighting department of Seattle, of which J. D. Ross is superintendent, to determine the practicability of using electricity for heating the home. For this purpose several houses have been fitted up by their owners with electric heaters, both of the direct radiation type and the type used in connection with hot water radiators. The lighting department connected these houses to its mains made a special rate for current, and kept complete records of the temperatures maintained in the house and the amount of current used.

The first house equipped is of concrete construction with solid 8½-in. walls, and contains five rooms, having a total floor area of 418 sq. ft., a cubic capacity of 3,252 cu. ft., an outside wall area of 491 sq. ft., and a window area of 127 sq. ft. In this house were installed five electric heaters of the direct radiation type, of which three were 2 K. W. heaters and the other two had capacities of 1½ K. W., respectively. Recording meters were placed in the service to measure the current; and the daily maximum, average and minimum temperatures, both outside and inside the house, were observed and recorded.

The total consumption for the year amounted to 10,250 K. W. hours, running from 2,430 K. W. hours in December to 20 K. W. hours in July. An average temperature of 70° F. was maintained inside the house, and the minimum at night was kept above 58° F. The mean outside temperature was 51° F. and the minimum 26° F. In this house no discrimination was made with regard to the time of day when the current was used.

Another method of using electric heat is to install an electric hot water heater to replace, or to be used in conjunction with the regular boilers was a hot-water heating system. In theory this method is less efficient than when direct radiating radiators are used, on account of the slight loss in the piping of the hot water system. An advantage which more than offsets this slight loss is that a hot-water storage tank may be installed which will supply heat to the house for several hours after the current is turned off, and in this way the supply of current may be cut off during the hours of maximum demand on the lighting plant for current for lighting purposes.

With this scheme of electric heating, enough customers can be supplied with current for heating purposes to exhaust the full capacity of the present distribution system without any further installation whatever except for the mere service wires from the pole to the house, since the heaters will be cut off during the hours when light is used.

There are now four houses equipped with the hot water system of electric heating on the city's lines. Experience shows that one kilowatt of heater capacity will supply 20 sq. ft. of radiation and will require 20 gals. of storage tank capacity to supply heat during the lighting peak in winter.

The cost of making the installation which is borne by the customer, will run from $10 to $25 per kilowatt capacity of the heater, depending on the size and layout of the house. This expense includes merely the wiring and installation of the electric heater and the cost of the heater itself. The records show that in one house of frame construction having 200 sq. ft. of radiation supplying four rooms with outside wall area of 846 sq. ft. and window area of 201 sq. ft., and cubic contents of 7,290 cu. ft., the monthly consumption of current during the winter months averages 3,000 k. w. hours with a temperature maintained in the house at 68° to 70°, and the average monthly consumption for the entire year will be about 13,000 k. w. hours.

To sum up the results of all the heating experiments to date: Electrical heating for homes is perfectly feasible and is the most convenient and cleanest method. Despite the fact that heaters of 100% efficiency are used, the amount of current needed makes the expense at present rates several times that for heating with coal. One pound of coal contains as much heat as 3 k. w. hours in electricity, and with coal at $6 per ton and current at 2 cents per k. w. hour, the coal costs 0.3 cents as against 6 cents for the current, a ratio of 20 to 1 in favor of the coal. This is partially offset by the fact that all of the heat of the current is utilized, while from 30% to 80% of the heat of the coal is wasted. Compared on a basis of cost, electricity at one-half cent per kilowatt hour is from 25% to 40% higher than coal at $6 per ton. By developing water power in large units and supplying heating during "off-peak" hours, it will probably be possible in the future to supply current at rates that will make its use for heating within the reach of the average income.—Heating and Ventilating Magazine.

Opens Seattle Sales Office

Mr. Beecher, the president of the American Standard Oil Burner Co., of Oakland, who manufacture the "Simplex" Centrifugal Rotary Oil Burner, has just returned from a trip to the Northwest, visiting Vancouver, Victoria, Seattle, Tacoma Olympia and Portland.

He reports that the business outlook in the Northwest is good, and his company is opening a branch sales, service and installation department in Seattle, at 309 First avenue South.

Illumination and the Architect

(Contributed)

ARCHITECTS are often accused of paying little or no attention to the art of lighting or to the adaptability of the structures they design to the execution of a system or plan of lighting that a lighting specialist may deem correct from practical and aesthetic standpoints. Perhaps the architects are guilty of this fault—at least so many of those who are primarily interested in good lighting have mentioned it that the organization recognized as the leading body of exponents of the art of illumination, the Illuminating Engineering Society, has often taken official cognizance of this lack of recognition by the architects.

Architecture as a science is older than the science of illumination; perhaps a better description of conditions would be that for a long period the architect had materials with which to develop his art much more rapidly in proportion than the lighting engineer. The newness of the art of illumination in comparison with the art of architecture, and the recent rapid growth of the necessity for better lighting may explain the alleged unfamiliarity of many architects with the sister science of illumination.

It is a notable fact that in recent years the art of the use of light has received ever-increasing attention from architects. The development of light sources of all types has been so rapid that there is now a sufficient variety of sizes and types of illuminants that any condition can be satisfied.

For instance, within the last half decade there have been developed and perfected Mazda lamps in sizes ranging from a fraction of one candle-power to two thousand candle-power; and a very notable feature of this development is that light is produced at three times the efficiency at which it is produced with the best type of old carbon filament lamps. A fact that is of as much importance as the development of light sources is the steady increase in the number and merit of devices for directing and controlling light.

Reflectors, shades and diffusing media are available in many styles and sizes and of all degrees of merit. No style of architecture need want for lack of a suitable light source and a suitable controlling medium. The proper selection and use of light sources and controlling media is often simply a matter of familiarity on the part of the architect with what is at his command and an open-minded attitude, which is happily more evident than ever before, that will permit suggestions from the authorities on light and lighting apparatus.

The great range of illuminants and the many devices of practical and artistic merit available for the control of light at the present time leave the architect unhampered in his work from the standpoint of illumination, a condition which has been a fact only a comparatively short time. No one should welcome the Mazda lamp more than the architect, for it has made possible greater flexibility in the production and control of light than the world has heretofore known. This is the age of demand for the best produced most efficiently, and in the matter of light the Mazda lamp surely fulfills the requirements, yet there are those who may be classed as unscrupulous sensationalists who assail the Mazda lamp and everything else that does not conform to their narrow-gauge, self-centered opinions, simply because of increased efficiency. The argument that the Mazda lamp should be condemned because it will produce three times as much light as the old carbon lamp for a given amount of electric current, may be classed with that of the old German burgomasters who opposed the lighting of streets because the light might aid highwaymen and robbers in their depredations. The opinion that Mazda lamps are too bright and that their use should be prohibited by law, as expressed by some self-styled authorities, is as sensible as the opinion that the building or use of a highly efficient locomotive should be prohibited because it might get more work out of the coal it burns than is actually needed in hauling a train. It is not necessary to use Mazda lamps of the same electrical consumption as the old carbon lamps formerly used if three times the light is not desired, for Mazda lamps are made in a great many sizes—why not select a lamp of one-third the electrical capacity, get the same candle-power as formerly, but a better quality of light, and reap the benefit of high efficiency by saving the two-thirds of the electric light bill?

Surely the modern architect cannot fail to realize the advantages of production of high efficiency, no matter in what field, and it is perhaps only a matter of circumstances that the unmodern stumbling blocks on the road to progress receive audience at all.

The Age of Electricity

The consulting engineer of a large electrical manufacturing company makes a statement that offers abundant food for speculation as to the future of transportation and its effect on the cost of living. He says that within the next ten years electric automobiles and the cost to maintain them will be so cheap that they will be in the reach of everybody. He says that the maintenance, including the cost of electricity and repairs, will not be over $10 a month and

the original cost will be so low that the man who rides on street cars now will be able to own his own auto.

In the face of the developments in electricity in the last generation it would be idle to deny that the expert is right. Our knowledge of electricity is in its infancy and the next few years will probably develop unsuspected uses for it. That it will soon cheapen the cost of transportation seems entirely likely.

Cheapening of rapid transit as foreshadowed by this electrical expert would cheapen the cost of living in many ways. It would bring the small producer closer to his market and would enable him to deal more directly with the consumer. It would enable wage earners to live farther away from the centers of population where they are employed, giving them cheaper rents and better means of existence. It would tend to drive the population of cities to the country and would give the dweller in the country more of the advantages of the city.—Exchange.

About War-Time Advertising

Selfridge & Co., the successful American firm in London, are publishing a series of talks in London papers. The following is entitled, "War-Time Advertising."

The advertisement solicitor entered the manager's office breezily; then he said "Good morning," and plunged into the latest war news without more ado. As he talked he noticed that there were three cards hung around the office; boldly displaying on them was the motto "Carry On." Over the manager's head was another sign, framed, and bearing the phrase "Business as Usual." On the desk between the two men were a number of little poster stamps bearing this latter cheery message. The manager was evidently sticking them onto his letters, for before answering the advertisement canvasser he took one off his tongue, placed it on the top corner of a sheet of letter paper, and slammed his clenched fist on it with the double object of sticking it firmly to the letter and of impressing his visitor with his iron resolution.

"No, sir," he exclaimed ponderously. You can't persuade me to spend money on advertising just now—why, with this war, and all the disturbances of trade it brings, I wonder at your—well, your lack of perception in coming here and wasting my time by asking me to spend more money!"

"But," returned the canvasser, looking around at the decorations, "from these mottoes I expected to find you really ready to do your share of 'carrying on,' and as you usually advertise rather extensively in the coming months, I naturally concluded that you were prepared to put into effect the 'Business as Usual' motto you have adopted."

"So I am doing," replied the business man; "in every way possible. None of my employes has been discharged, those on active service will find their positions awaiting them on their return, and the wives of those of them who are married will receive half their husbands' salaries during the war; I have made adequate arrangements for a continuous supply of British-made goods in place of the usual German and Austrian supplies, and in no case are the prices increased. If that isn't 'carrying on,' I don't know what is! But, of course, one has to draw in somewhere, for a time at all events, and advertising, unfortunately, is such an expensive item that it will have to bear the brunt of the economic disturbances."

The canvasser started to laugh.

"You don't seem very depressed about it," observed the manager.

"Excuse me," replied the other, "but your view really has its amusing side. The one factor in your business you can least afford to do without, you say is too expensive, and will have to bear the brunt—yes, it will 'have to bear the brunt,' but not in the way you mean.

"In your case, you do everything possible to 'carry on' except let the public know of your efforts on their behalf. Do you expect your customers to guess what you are doing?

"Why, the changing conditions of commerce present new problems, new selling points for your methods and your goods. They enable your business to show its adaptability—you have shown it to me, but are refusing to show it to the public. You say that advertising is 'expensive.' But you do not advertise in times of peace because it is expensive, but because your customers look to you to tell them news that will interest them and save them money. If you suddenly choke that source of news, the public are left to infer anything they please about you. In fact you are making a handsome present to those of your competitors who, besides making all preparations to conduct their business 'as usual,' also see to it that the public know they have made such preparations.

"You will admit that publicity is one of the most valuable weapons that commerce has at her command in times of peace?"

"Yes, I admit that."

"Then what impression do you think the Allies would make upon the enemy if they sent their men to the front ready for 'business as usual'—but without ammunition?"

"....Don't answer—advertise!"

—From "Printer's Ink."

Berkeley Apartment House

Architect W. L. Schmolle of San Francisco has completed plans for an apartment house to be erected at College avenue and Derby street, Berkeley, for Mrs. L. Dabney.

Some Industrial Exhibits at the Panama-Pacific Exposition

By A. A. WILLOUGHBY

THE Panama-Pacific International Exposition, from an architectural and engineering standpoint, is one to excite admiration and wonder at the workmanlike manner in which everything has been builded as though permanently, yet only for a few months. The many and varied exhibits covering every form of human æctivity and gathered from the ends of the earth, contain numerous features of unusual interest, and brief descriptions of these displays will be given in this magazine from time to time.

California Corrugated Culvert Company

The exhibit made by this company is a part of the collective exhibit arranged by the Armco Iron Culvert Manufacturers' Association in the Palace of Mines and Metallurgy. Corrugated road culverts are featured in the exhibit, covering the two principal purposes for which they are built—county highway and railroad service. A typical highway installation is featured in which a stream of water is seen running through the culvert, as also a section of railroad roadbed using the culvert. A section of a metal flume is shown as in actual service. Model irrigation gates are an interesting feature of the exhibit.

Municipal Engineering and Contracting Company

One of the latest type improved steam-driven traction street pavers is exhibited. It is mounted on caterpillar wheels and is equipped with a 20-ft. boom, automatic dumping bucket, automatic steering device and a 15-ft. chute. Great tractive effort is claimed for it in traversing steep grades. It is of the type used extensively in Michigan highway work. A gasoline driven standard paver is a part of the exhibit and is of the type used in building the Panama Canal locks and in the construction of the Los Angeles Aqueduct.

Edward R. Bacon Company

A collective exhibit of contractors' and road building machinery is shown in Machinery Palace. A rotary trench digger mounted on caterpillar wheels and gasoline driven will attract a great deal of interest. A street paving machine which has been used extensively by the State Highway Commission, is shown. Grab buckets of the type used in building the Exposition site, a street sweeper, road rollers, concrete mixer, road drag and corrugated and cast iron culverts are exhibited. An interesting feature is a tamping machine used for filling trenches.

Crane Company

Five railroad cars were used in transporting the material for this exhibit, which weighs in the neighborhood of 150 tons and occupies 4000 sq. ft. of space in the center portion of Machinery Palace.

The main feature of interest is a 72 in. hydraulically operated gate valve weighing 57,000 lbs. and in operation throughout the Exposition. A multiple steam trap working exhibit, consisting of tilt non-return traps for high pressure lines, tilt 3-valve lifting trap for low pressure lines and tilt direct return traps handling condensation in steam lines. The exhibit also contains one of each of the 17,000 articles made by the company.

The railings and arches are so arranged as to make it an educational and instructive exhibit and are composed of articles made by the company. Each side of the main entrance is made up of steam headers connected in multiple, using cast steel and wrought steel pipe with welded nozzles for the pillars. The tops of the pillars are capped with a 12-in. expansion "U" bend forming an archway. Beneath this bend and connected to the pillars is a 6 in. bend forming a loop on a complete circle. The railings on either side of the main entrance are made of a series of gate valves and "T's". One of the other entrances is made up of drainage fittings with the railings of angle and check valves and the other is constructed of pipe valves and fittings used in ice making and refrigerating plants handling ammonia.

A complete line of modern sanitary plumbing fixtures is exhibited in Manufactures Palace.

Fess System, Inc.

A rotary oil burner system for use in heating plants and under steam boilers is shown in two operating plants, one under a steam boiler for a heating plant and one in a hot air heating furnace. An oil burning hotel range using a blast burner with a single valve to control the air and oil mixtures is exhibited. Three different sized plants are assembled to show the construction of the apparatus which consists of a rotary burner operated by an electric motor. The system is used in heating several of the Exposition buildings.

American Standard Oil Burner Company

A crude oil burner system used in low pressure heating plants is shown. The burners are of the totary type using a multiple vane fan and a water method type.

State, County and Municipal Engineering

Good Roads—Water—Sewers
—Bridges—Fire Protection

San Francisco's First Municipal Tunnel

THE Stockton street tunnel, which opens a direct route to the North Beach and Chinatown section of San Francisco, is proving a greater convenience than anticipated, and it would seem that the cost of the bore has been money well expended.

The project for a tunnel in Stockton street from Bush to Sacramento streets was first broached shortly after the fire, and a franchise was granted in 1907 to a private corporation to construct a street railway through the hill from Market street to the North Beach waterfront. The project proved too great for private financing and the franchise was abandoned in favor of a municipal undertaking.

A large amount of preliminary work had to be done before a start could be made. The charter was amended in 1910 so that the city could have legal authority to undertake the project, and following the adoption of the amendment an ordinance had to be prepared so that the procedure would be adequate for its successful financing. The method called for an assessment of the entire cost upon an assessment district which would be benefited by the proposed construction. There were no precedents for such work in the state, and an original scheme had to be worked out in its minutest detail. The "Tunnel Procedure Ordinance" was framed and adopted in September, 1911, and the engineering department immediately took up the practical part of the work.

The report of the engineer, showing the assessment district the plans and specifications, and the amount of individual assessments, was filed April 19, 1912. The estimated cost, including possible damages and incidentals, was $631,-879. This amount was assessed against 1,443 parcels of lands extending from the south side of Market street to the bay shore on the north. A year was spent in public hearings and in making minor corrections in the details. An action at law, involving the legality of the proceedings, was commenced and resulted in establishing the validity of all that had thus far been done. Damage claims had been settled amounting to nearly $200,-000, and bids for construction were received in April, 1913. Actual construction commenced in the month following.

The Stockton street tunnel, as constructed, has the widest arch span of any long tunnel yet designed. It opens a direct line for street car and vehicular traffic between the downtown district and the Panama-Pacific Exposition grounds, and will greatly aid the rapid development of the North Beach territory.

The following data concerning the tunnel is furnished by the city engineer:

Length, portal to portal, feet	911
Length of north approach, feet	138
Length of south approach, feet	275
Total length, including approaches	1,324
Height of arch above curb, feet	18
Width, feet	50
Thickness of base, feet	8
Thickness of roof	2 ft. 8 in.
Cubic yards excavation	143,000
Cubic yards concrete	16,500
Pounds of steel	637,000
Price	$430,000.00
Damages	$191,000.00

Tunnel extends from Bush street to point 182 feet south of the center line of Stockton street.

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The Jitney "Contagion"

Pacific coast cities, especially San Francisco and Los Angeles, are having their experience with the jitney bus and the "contagion," as some call this new transportation fad, threatens to demoralize the business of the big car companies, if, indeed, it has not already done so, as well as seriously impair the municipal and state coffers. That drastic legislation must be undertaken is admitted both by the friends and opponents of the jitney.

Los Angeles has been doing the heavy pioneering in working toward a solution of the jitney bus problem. The jitney bus originated in Phoenix, and was a good thing there, operating on streets not covered by electric railway service. Next it was heard of in Long Beach, where, in certain sections of the city, it supplemented with a needed transportation service the existing electric railway service. The street railway company has recently petitioned the city council of Long Beach for permissnon to abandon about four miles of street car lines, which, it claims, do not pay in competition with the jitneys. The company has taken off about 40 cars from Los Angeles lines because of the reduction in traffic.

The street railways in Monterey and Pacific Grove are reported to have been forced to the wall on account of this new competition.

Houston, Texas, began about the middle of December and has developed over 200 cars, which have been taking $1,000 a day out of street railway fares, with an increase in number of accidents. Autos

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PAVING AND RED PRESSED BRICK AT VALLEJO BRICK & TILE CO.'S VALLEJO YARD

The Pratt Building Material Co. has purchased the pressed and paving brick, consisting of over half a million brick from the Vallejo Brick & Tile Co., at their San Francisco yard as well as at their Vallejo factory. The stock consists of 75 M cherry red pressed brick, 100 M red dry pressed, 50 M paving brick, 100 M sewer brick, 100 M selected commons, 25 M paving klinkers, fire brick, buff brick, tile, etc. Ask Pratt Building Material Co., Hearst building, San Francisco, Douglas 300, for a special price on them.

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pay $1 license fee and file $100 bond to comply with city ordinances. The Jitney Association is trying to work out a regulating ordinance, in co-operation with the city council.

Seattle began a little later and now has over 500 autos in service, some of which run all night, with 10-cent fare after midnight. The Seattle Auto Transit Association has 300 members and has retained counsel to protect its interests in the Legislature. Autos pay $2 state tax and $4 city vehicle license. The State Public Service Commission recently decided that they are common carriers and subject to regulation by the commission.

San Francisco began early in January, now has over 1,000 cars in operation and expects 2,000 when the exposition traffic is developed. Regulations by city ordinance, by legislative act and by the State Railroad Commission are all in process. Oakland has 450 jitneys and an association of owners.

The California State Legislature will try and regulate the traffic by imposing a State Tax similar to that paid by the street car companies.

The Local Bidder

The local bidder is still the favorite of fortune in some sections of the country. At two recent lettings—one in the east, the other in the west—the native son did not even have to come anywhere near the figures of the low bidders. In one case there were four contractors whose bids were lower than that of the man receiving the contract. On the other job the local contractor would have been low had there not been three other bidders. The award of both contracts was made on the grounds that the contractors were residents of the towns where the work was to be done, were taxpayers and would employ local labor. Both improvements were advertised widely and as a result many outside contractors submitted estimates. This competition, of course, kept down somewhat the prices of the local men. Possibly this was one of the reasons for inviting outsiders to figure on the work. These towns, by letting the improvements to home men will have to pay about 20 per cent more than they would if the low bidders had secured the contracts. They also have acquired a reputation that will be remembered by contractors when asked to bid on their other lettings.—Engineering and Contracting.

Big Irrigation Project

An $800,000 irrigation project is proposed by property owners in the Terra Bella section of Tulare County, California. The district will be known as the Terra Bella Irrigation District and it will be organized under the Wright Irrigation Act. This act provides for the formation of a district by the County Supervisors upon petition of a majority of the property owners representing a majority in value of the lands concerned. The district is authorized to issue bonds for the construction or acquirement of works and water rights. A preliminary report on the Terra Bella project has been submitted to the organization committee by Stephen E. Kieffer, consulting engineer, San Francisco.

Kern County Spending $2,500,000 for Better Roads

Kern County, California, will offer many opportunities to the highway contractor during the next few months. The county is just starting construction on a highway system that will call for an expenditure of $2,500,000. Seven contracts have been let already, and plans are ready for more work to be done in ten-mile sections. A large part of the mileage will be of the oiled macadam type, 16 ft. wide, and in general 6 in. thick after rolling. This thickness will be increased when it is deemed expedient to do so. For the bituminous macadam work the county will furnish to the contractor, f. o. b. cars at the nearest available railroad siding, the necessary broken stone and asphaltic oil.

Some of the projected highways will of necessity be constructed on adobe and alkali soil. Where this condition exists it is the intention to use concrete pavement surfaced with asphaltic oil and screenings. The Portland cement, broken stone and asphaltic oil will be furnished by the county, f. o. b. cars at the nearest available railroad siding.

The county has constructed a crushing plant at Keene, designed to have an output of 1,000 tons in eight hours. This will be operated by the Commission to furnish broken stone for road construction. The rock is a fair quality of granite.

The system will be constructed under the direction of the County Highway Commission of which P. H. Everett, Bakersfield, Cal., is chief engineer.

Complete and Perfect

The Panama-Pacific Exposition has opened with the most favorable anticipations, and in spite of the fact that more than half of the human family are excited and torn up by the clang of arms and the rumors of war there seems to be a very good attendance. The exposition itself is so complete and perfect that it exceeds the expectation of the most sanguine. The railroads and the steamship lines have made rate concessions so that practically every American will have a chance to take a trip to the "Land of the Setting Sun" to enjoy the great national exhibition.—Rock Products.

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The Latest

A material which has just been placed on the market by E. A. Bullis & Co., of the Merchants National Bank building, San Francisco, is worthy of note because of the numerous uses which may be found for it. It is known as Federal Elastic Compound and is manufactured by the Federal Steel Cement Mills of Cleveland, Ohio.

This compound is supplied in the form of a plastic paste and is composed of asbestos and other minerals selected for their imperviousness to the elements. The field for its use is practically unlimited as it may be applied by anybody who has a hand and a trowel, and it will prove useful in every sort of a building, from a shed to the largest industrial plant.

Federal Elastic Compound is applied as though it were a plaster, and the following will give an idea of the almost unlimited ways wherein it may be of service.

It will overcome seepage in all foundations, rendering cellar walls absolutely impervious to dampness. It may be used for paint as a more efficient protection on metal and other surfaces. It may be used for airproofing and waterproofing silos, tanks, vats, etc., and also for covering pipes and setting them; making airtight and watertight joints; making screws and bolts tight; for bedding slate and tile and coating cement tile; for repairing leaks in roofs, gutters, flashings, flues and chimneys. It may be used for setting glass or repairing broken panes (when so applied, it is far more efficient than putty, as it does not dry and shrink); and it may be used for expansion joints in concrete.

The above is a partial list of the uses of Federal Elastic Compound, from which will be seen an almost unlimited field where it can be used.

Another remarkable feature of the material is the fact that it will stop a leak when applied to a damp surface in a drenching rain. This will mean that the stock in a building will not become ruined while waiting for the roof to dry off in order to make repairs—a delay which was necessary before the advent of this material on the market.

Federal Elastic Compound takes about thirty days to set, but it does not lose its wonderful elasticity, which is the secret of its success in resisting the elements when applied to roofs or use for other purposes.

The compound is supplied in various sized packages ranging from 25-pound pails to barrels of about 500 pounds.

E. A. Bullis & Company, the local agents, have signified their willingness to respond to all inquiries addressed to them concerning Federal Elastic Compound and to furnish further informa-

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tion on this most interesting material which may be so commonly used.

It might be well to mention that the manufacturers will pledge a ten year guarantee, thus giving a good idea of the lasting qualities that may be expected of this material when used as a roofing.

Some Roofing

"That over five million square feet of the Paraffine Paint Company's roofing was used on the Exposition buildings at San Francisco, and particularly on the Fine Arts building, which is one of the very few permanent buildings on the Exposition grounds, is a record of which we may well be proud," said an official of the company recently.

"It is also well to know that the Canadian building—another permanent structure—was also covered with our material; as well as the New York building, and agitation has been started to also make this latter building one of the permanent buildings.

"A large portion of the Machinery Hall was also covered with our products."

The Enterprise of One Brick Company

Six separate exhibits have been planned and executed by the Los Angeles Pressed Brick Company. Several months ago the company arranged a permanent exhibit for the state museum at Exposition park, Los Angeles. Later an exhibit was arranged of clay products for the metropolitan exhibit of building materials.

Then the firm prepared their exhibit for the San Diego exposition, and three for the exposition at San Francisco. There are two small displays in the Palace of Mines and in the California state building, and a larger display in the Palact of Varied Industries.

Practically every kind of face brick, roofing tile, enameled and faience, as well as quarry tile, is represented in a space fifteen by twenty-four feet.

Commercial Travelers' Building

The Commercial Travelers' Congress Building Association has purchased a lot at the westerly line of Polk street, sixty feet south of Hayes streets, having a frontage of sixty feet and a depth of 100 feet, San Francisco, and will erect a four-story building that will be the headquarters in San Francisco of the Pacific Coast Commercial Travelers' Association. It is intended that the structure shall be completed in time for the congress of commercial travelers in this city during the Exposition season, or some time next summer. The building is to have a large hall with lodge and club rooms.

Kitchen Comfort

—is but one of the many advantages of "Quick as a Wink," Hot Water, the "Pittsburg Way."

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San Francisco Architectural Club Visits a Home Industry

By H. B. K.

A Saturday half holiday in March afforded the San Francisco Architectural Club an opportunity of examining into the merits of the "Pacific" Vitreous and Enamel Ware and to verify their claims of equality (if not superiority) over the eastern products. It was agreed that if the real article was to be had at home, then there was a saving in freight charges, a quickness and certainty in deliveries, and an assurance and insurance in the matter of duplicating or replacing any parts which might become worn, broken or out of order.

Accordingly about seventy of those engaged in the architectural profession gathered at the S. P. ferry and under the hospitable escort of Mr. Stern and Mr. Friesleben of the associated concerns known as the Pacific Porcelain Ware Co. and the Pacific Sanitary Manufacturing Co., took private cars from the Oakland Mole direct to the Richmond factories of these companies. Here, under guidance of experts, a careful tour was made of the shops and certainly a good bit of information gleaned by our "boys" for future use.

The porcelain ware factory was first visited and the group viewed with "warm" admiration the six large kilns (one being the second largest in the U. S.), where under a temperature of from 2200 degrees to 3600 degrees and after a baking of from six to eight days there is produced a line of vitreous tanks lavatories, closet bowls, drinking fountains, etc., which, it is claimed, cannot be excelled by other potteries.

Then came the second plant to be examined, which was even more interesting than the first. This was the enameling works of the Pacific Sanitary Manufacturing Company. Here it was instructive to see the pig iron hauled into the foundry and to follow the different processes, including the firing and glazing, until the perfect products were produced, inspected and loaded on the waiting freight cars. This line comprises bath tubs, pedestal lavatories, kitchen sinks, laundry trays and similar fixtures besides a variety of even more ambitious articles, such as lighting fixtures, refrigerators, drinking fountains, etc.

It was stated that the orders for the "Pacific" goods are always taxing the facilities of the Richmond plants, and extensions are contemplated. Such large orders for plumbing fixtures required for the new San Francisco City Hall, Hobart building, Plaza Hotel, Flat Iron building, etc., certainly show that the "home industry" goods are "catching on" with our architects.

A noticeable feature of these industries is the high grade of workmen employed. These men work but 5 or 6 hours a day and receive, it is said, the highest wages paid to any union men. They come largely from the eastern potteries and are all skilled in their trades. It is surely a distinct advantage to our state to have an industry established here which brings as settlers and citizens so desirable a body of men, fully 300 in number.

Safety First for Schools

Probably no single concern in the country is making a stronger fight for fireproof construction that the Dahlstrom Metallic Door Company of Jamestown, N. Y. The manner in which this company places its arguments before the architects is praiseworthy and deserves to bear fruit. The information now being published by the Dahlstrom company in the form of booklets, "Safety First for Hospitals," and "Safety First for Schools," is backed by carefully compiled statistics and figures that are a matter of public record. To quote from the School pamphlet:

> The first two months in 1914, damage to the value of $1,000,000 was caused by fires in schools and educational institutions, besides the loss of life, which cannot of course be reckoned in dollars and cents.
>
> Horrors like the Collinwood disaster, near Cleveland, Ohio, where one hundred and seventy-three children perished, should be in the minds of every public-spirited citizen, tax-payer, or official

If you see "B. C. VAN EMON ELEVATORS, Incorporated," on the name plate, you know the elevator is all right.
Office, 235 First St., San Francisco
Telephone Sutter 2192

when they are about to expend the tax-payers' money to build school-houses.

Every time there is a school-house fire, the lives of someone's little children are jeopardized.

In the Collinwood school the fire started in the basement by a steam pipe resting on a wooden joist. If such a catastrophe be repeated whose will be the blame?

"Built to Burn" is a placard that could be tacked on more than 250,000 school-houses in the United States. 20,000,000 school children are students in buildings that are fire traps.

Wooden doors are the choicest kind of morsels for a fire. Millions of dollars are expended upon the exteriors of school-houses to make them architecturally pretentious, but within the very walls of these structures you will find doors, door frames, windows, window sashes, and wainscoting all of fire inviting wood in readiness to supply fuel to the chance flame, insuring a severe fire once it gets started.

The basic principle of fireproofing is isolation, division, separation, protection of things beyond the immediate zone of fire, and prevention of the fire, from spreading, confining it to its place of origin where it can be stamped out. To do this all wall openings must be safeguarded. For this purpose fireproof doors and trim have now become a necessity in the equipment of modern buildings. The use of hollow metal doors and trim in a building in other respects non-combustible makes that building really fireproof.

Medusa Waterproofing Paste

To meet a growing demand and preference among architects and cement users, for a waterproofing which can be dissolved in the water to be used in mixing mortar or concrete, the Sandusky Portland Cement Company has perfected the Medusa Waterproofing in paste form. The Building Material Company, Monadnock building, San Francisco, have this material in stock for immediate use.

The Medusa Waterproofing Paste is identical with the powder in resulting composition and waterproofing effect. The sole difference between the two is the greater ease and convenience of mixing which the paste form offers. In consequence of this, perfect waterproofing effect is more certainly obtained with the paste than with the powder, although if the mixing of the powder with the cement is thoroughly and carefully done, equally good results can be obtained with either form.

The Medusa Waterproofing is manufactured for this company by the Medusa Concrete Waterproofing Company, assignee and owner of the following patents:

Newberry, No. 851247, April 23, 1907.

Barrett, No. 898547, September 15, 1908.

Liebold, No. 771080, September 27, 1904.

Liebold, Reissue No. 12470, April 23, 1906.

Liebold, No. 847015, March 12, 1907.

By the decrees of the U. S. District Court, Northern District of Illinois, February 13, 1914, and of the U. S. Circuit Court of Appeals for the Seventh Circuit, January 4, 1915, the Newberry patent was fully sustained and the product of a well-known maker of waterproofing declared an infringement.

Two Bank Buildings

Architect B. G. McDougall has prepared plans for a $30,000 bank building at Crockett, and a $10,000 bank building at Pinole. The Crockett building will be two stories and of brick and terra cotta.

Architects

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Current Prices of Building Materials

These quotations furnished by reliable San Francisco and Los Angeles dealers

(Names and addresses will be supplied upon request.)

SAN FRANCISCO PRICES

Common Red Brick, $7.50 per M, ex. cars.
No. 1 Pressed Brick, $35.00 to $40.00 per M; Wire cut, $35.00 per M.
No. 1 Red Pressed Brick, $20.00 to $30.00 per M.
Red Stock Brick, $14.00 per M.
California Portland Cement, C/L $2.30 per bbl.; L.C.L. $2.55 per bbl.
White Cement: Atlas, $6.00; Medusa, $6.00 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 75c per ton, F. O. B. cars.
Bank Sand, $1.00 per cu. yd.
Roofing Gravel, $1.40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22.00 to $25.00 per square, laid.
Brick Lime, $1.35 per bbl., C/L.
Finish Lime, $1.50 per bbl., C/L.
Hardwall Gypsum Plaster, $11.00 per ton, carload; 1150 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $14.00.
Oregon Pine, Rough, 2 x 3 to 2- 12, $15.00.
Oregon Pine 1 x T. & G. Flooring, No. 1, $31 per M; No. 2, $28; No. 3, $26.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $26 to $28.
Redwood, Rough Common, 1 x 4 and up, $20.00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $20.00 to $22.00.
Redwood Rustic, No. 1, $35.00; No. 2, $32.00.
Redwood Ceiling, No. 1, $29.00; No. 2, $26.00.
Redwood Shingles, No. 1, $2.45 full count.
Red Cedar Shingles, Star-A-Star- $2.60 full count.
Pine Lath, $2.40 per M.
Metal Lath, 13 to 25c per yd., according to quality.
1 x 3 Oak Flooring, Q. S. Clear, $120.00 per M; Select $80.00 per M.
¼ x 2½ Oak Flooring, Q. S. Clear, $96.00 per M; Select, $74.00 per M.
1 x 3 Maple Flooring Clear, $75.00 per M; Clear White, $105.00 per M.
White Lead in Oil, 8¼c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 63c gal. Raw Linseed Oil, 61c gal.
Turpentine, per gallon, 63 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 30c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4.50 per M.
Clinker Brick, $9.00 per M.
Pressed Brick, $35.00 per M.
Enameled Brick, $65.00 per M.
Red Roofing Tile, $12.00 and $15.00 per square (not laid).
White Cement, $6.00 per bbl.
Portland Cement, $2.30 per bbl.
Lime, $1.50 to $1.75 per bbl.
Hardwall Plaster, per ton, $9.90 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $19.00 to $22.00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17.00 to $21.00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35.00; No. 3, $22.50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36.00; No. 2, $31.00
Redwood, Rough Common, $20.00 to $24.00.
Redwood Rustic, No. 1, $38.00; No. 2, $33.00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33.00; No. 2, $28.00 per M.
Redwood Shingles, 4 bdls. to M, No. 1, $2.25; No. 2, $1.75.
Red Cedar Shingles, 4 bdls. to M, Star-A-Star, $2.75.
Pine Lath, 1½ in. x 4 ft., $3.25 per M; 1¾ in. x 4 ft. $3.65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 65c gallon.
Turpentine, bbls., 63 to 70c. gallon.
Crushed Rock and Gravel, $1.65 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7.00 per M, C/L.
Pressed Brick, Wire Cut, $30.00 per M, C/L.
Portland Cement, $2.40 per bbl. carloads.
Crushed Rock and Gravel, 65c per ton, ex. cars.
Sand, $1.00 yd. on cars.
Roofing Gravel, $1.50 per ton.
Lime, $1.35 bbl.
Hardwall Plaster, $13.00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7.75 per M, del.
Face Brick, Wire Cut, $31.00 per M C/L.
Cement, $2.40 per bbl., C/L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1.50 per ton.
Lime, $1.35.
Hardwall Plaster, $13.00 ex. whse. per ton.

FRESNO PRICES

Common Brick, $9.50 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.84 per bbl., C/L.
Crushed Rock and Gravel, $1.35 per ton.
Black Face Brick, $25.00 per M—F. O. B.
Sand, $1.00 per yd., del.
Roofing Gravel, $1.85 per ton.
Lime, $1.50 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9.00 per M, del.
Face Brick, Wire Cut, $37.00 per M, C/L.
Cement, $2.77 per bbl., C/L.
Crushed Rock and Gravel, $1.80 per ton.
Sand, $1.00 per yd., del.
Roofing Gravel, $2.00 per ton.
Lime, $1.50 per bbl.
Hardwall Plaster, $15.00 per ton, ex. whse.

CHICO PRICES

Common Brick, $11.00 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C/L.
Sand, $1.00 per yard.
Roofing Gravel, $1.50 per ton.
Lime, $1.40 bbl.
Hardwall Plaster $14.00 per ton, ex. whse.

Taking Jap-a-lac to the Japanese

Here is an interesting picture which shows that American products are finding their way not only into the countries south of us, but that they are also finding favor among the Asiatic people.

This window display might, if one did not notice the costumes of the men who are shown at the left, be supposed to have been made in some American or European city. As a matter of fact, the picture shows a street scene in Tokio, Japan.

Perhaps it is only natural that the Japanese, with their eagerness to present a fine appearance, should be quick to see the merits of Jap-a-lac. In any event, such scenes as that which is shown in the picture are not uncommon in the land of the Mikado. It is carried in stock by all the better stores in that country.

This picture shows a window in St. Luke's Hospital Supply Depot, Tokio, an institution that is managed by Mr. J. A. Fenner. The attractiveness of Mr. Fenner's display at once suggests enterprise, and shows very plainly that he must find Jap-a-lac to be a popular commodity of his establishment.

Carrying coals to Newcastle is generally supposed to be a profitless undertaking; but taking Jap-a-lac to the Japanese is evidently a venture that is not without pecuniary rewards.

How to Lay Shingles

Follow these instructions in laying and double the life of your roof:

Wet the shingles thoroughly twenty-four hours before laying and use 3d zinc, copper or galvanized nails. One nail in each shingle 6 inches in width or narrower and two nails in all shingles wider.

For one-third pitch roof lay 4½ inches to the weather.

For one-half pitch roof lay 5 inches to the weather.

On the sides of buildings lay 6 inches to the weather.

Break all joints as far from the edges as possible.

Advertise It Now!

That's a splendid idea somebody in the Middle West is advocating —the "buy it now" plan.

But why not translate those words to read:

"Advertise it now!"

When times are quiet and business is slack and architects are not busy — that's the period to advertise.

When the architect has a lot of work he hasn't the time to read the advertisements.

Advertise it now, then when he has a job his mind will revert to some advertisement he has read in his leisure moments and he will specify your goods. Try it.

Advertise It Now!

When writing to Advertisers please mention this magazine.

The "B. C." Van Emon Elevator to the Front

The rapid growth of the B. C. Van Emon Elevators, Incorporated, has attracted the attention of architects and owners of buildings to the merits of this well-known appliance. There is a reason for this popularity and this might be stated to be the confidence which the building public has in an elevator built in a shop equipped with the latest and best machinery and where every detail of the construction is done under the personal supervision of a pioneer and experienced elevator builder who not only understands every principle and method involved but who is himself the inventor of a score of improvements in use in elevators now in successful operation throughout the world. It is Mr. Van Emon's undisputed claim that he built the first electric elevator and the name "B. C." Van Emon stands today as it has for a quarter of a century as the synonym of skill, experience and thoroughness in the making, installing and operating of electric elevators.

"Safety First" is his motto and his slogan is, "If you see 'B. C. Van Emon Elevators, Incorporated' on the name plate, you know the elevator is all right."

His place of business for several years has been at 235 First street, San Francisco (Telephone Sutter 2192), and he has associated with him workmen who have been in his employ for more than a decade and who are imbued with his ideas and help sustain his reputation for conscientious workmanship.

Here are some of the recent installations of B. C. Van Emon electric elevators: Schwabacher-Frey building, Foster & O'Rear Candy Store, Union Oil Company at Oleum, National Ice and Cold Storage Company, Goodyear Tire and Rubber Co., Sutter and Van Ness; California Market; S. S. Parsons building corner Clay and Battery; Glenn Estate, Sixteenth and Guerrero; G. E. Bennett, Tenth and Folsom; Great Western Smelting and Refining Co., Spear and Folsom; George D. Stone building, Sacramento and Drumm; Guggenheim Interests at Fresno, etc., etc.

Also the following installations for their ice lowering and freight elevators:

San Quentin Prison; B. P. Oliver, 641 Front St.; Peck & Hill Furniture Co., two freight elevators; National Ice Co., Watsonville; A. Pick & Co., three freight elevators.

Reinforced Concrete Warehouse

E. P. Parcher, 6719 Hollywood boulevard, Los Angeles, has prepared plans for a reinforced concrete storage warehouse to be erected on Highland avenue, near Hollywood boulevard, for the C. E. Toberman Co., 6774 Hollywood boulevard. John F. Blee, 509 Union League building, is the engineer.

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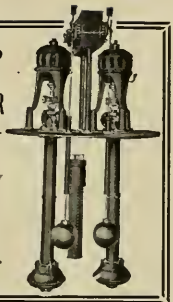

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Architects Are Specifying Port Orford White Cedar

The Tilden Lumber Company, foot of University avenue, Berkeley, are wholesale and retail dealers in Port Orford white cedar, a wood that makes a very elegant interior finish, and is quite popular with the discriminating architect. This wood also commends itself for enamel work, window frames and outside finish, and is known for its lasting qualities where it comes in contact with the soil.

At Sacramento

City Building Superintendent J. J. Backus and Architect G. E. Bergstrom of Los Angeles spent some time in Sacramento last month, representing the City Council and Los Angeles City in connection with proposed legislation governing building construction. A number of new laws have been introduced in the legislature to amend the present hotel and tenement house acts and to vest the authority for the interpretation and enforcement of the acts in the State Housing and Immigration Commission. New bills have also been introduced to govern and regulate the construction of flats and private dwellings. Municipalities as a rule are opposed to the latter measure as being entirely unnecessary.

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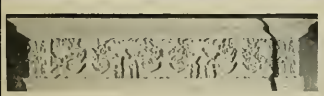

Frieze executed for Hotel St. Francis
Bliss & Faville, Architects

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Big Charge of Nitroglycerin

The Riverside-Portland Cement Company recently set off the biggest charge of nitroglycerin ever exploded at one time in Southern California, utilizing approximately 120,000 lbs. or 60 tons of the explosive. The charge was exploded by electricity at 12:20 o'clock, March 22, and the rising volume of cement rock, smoke and dust was recorded on moving picture films. For six months crews have been working into the mountain of limestone at the company's plant at Crestmore, near Riverside, and for two weeks four men have been placing the nitroglycerin in the holes drilled at intervals along the 500 feet of tunnel. It is estimated that between 125,000 and 135,000 cubic yards of material were dislodged and rendered available for the crushers at the mill, which will probably have sufficient limestone available to keep it supplied for a year. The mountain side to a height of 160 feet and for a distance of 900 feet was shattered by the explosion, which was successful from every standpoint.

Quick Delivery of Sewer Pipe

Pacific Sewer Pipe Company recently filled a hurry up order on twenty-four hours' notice from its Los Nietos plant by loading a train of sixteen cars with 24-in. vitrified pipe destined for Huntington Beach. This is probably the largest trainload of sewer pipe ever sent out in one shipment in Southern California, and the speed of its delivery was necessitated by the fact that the trenches were ready and their walls threatening to cave in. Another manufacturer failed to make deliveries on time.

Coast Offices Given Prominence

The March number of Employees' Bulletin, published by Robt. W. Hunt & Co., each month to keep its various offices and employees in touch with each other's work and for interchange of ideas, is devoted entirely to the Pacific Coast offices and articles contributed by the Coast staff. This Bulletin is a 24-page magazine recording the records of past work and gives the experience and ideas of the men in mill, shop and field, and has been found a great inspiration to every member of the organization.

Certificates Granted to Architects

Certificates to practice architecture have been granted to the following by the State Board of Architecture for Southern California: Charles G. Odd, 711 Grant building; Don W. Wells, 1402 Valencia street; George H. Hodenpyl, Jr., 2216 Juliet street; H. Alfred Anderson, 756 Carondelet street.

Hollow Metal Elevator Doors

ONE of the most important openings in a building and one that requires utmost protection is the elevator shaft. Absolute protection and safety from fire can be obtained by the use of the Dahlstrom Hollow Metal Doors and Trim.

We manufacture elevator doors in all kinds of combinations, including single sliding, double speed sliding, opposite sliding, two-thirds opening double speed sliding, as well as vertical sliding and folding. The horizontal sliding doors are also made to swing, so as to throw the whole width of the opening clear for moving large articles of furniture, etc., and this feature is taken care of by different methods, details of which will be sent on request to any one interested.

We also construct elevator doors with solid panels on the shaft side and mirrors inserted on the outside with either plain or ornamental divisions. In many cases transoms over the doors or stationary panels between the doors or at the sides are required and any and all of these requirements can be met in the Dahlstrom Products.

Our Hollow Metal Elevator Doors are made of cold drawn steel, brass and bronze.

Write us for further particulars.

DAHLSTROM METALLIC DOOR COMPANY

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A National Electric Week

Acting upon a suggestion advanced by the Society for Electrical Development, representatives of leading electrical manufacturers, central stations, jobbers, contractors, dealers and trade journals have voted in favor of planning a great national electric week to be held in the United States and Canada sometime this fall.

It was decided to recommend to the board of directors of the society to make this a big sales and educational week, during which time all affiliated interests would co-operate with national manufacturers, civic bodies, etc., to boost for the better lighting of streets, stores, factories, schools and homes, and it will be the aim of the movement to promote the sale of electrical appliances, motors; in fact, everything electrical, and to aid the development of the electrical industry by conducting house-wiring campaigns in every city.

Gas Heating Par Excellence

More than usual interest is being taken in the Cole gas furnace, a heating apparatus using gas as a fuel and combining absolutely fresh air to its output.

No expense has been spared to make it as near perfect as possible in materials and workmanship, Toncon galvanized iron chambers, stone and sheet asbestos and wrought steel register being used. However, it might be made of gold and silver and still be a failure if it did not do what is claimed for it, namely, "deliver where you live, absolutely pure warm air," and also do this at the least possible minimum cost.

Messrs. Fisher & Klauser, the distributors for Northern California, are more than pleased at the progress they are making in the installation of the furnace, especially in the residence districts of San Francisco and in Alameda county.

A well-known Los Angeles physician had one installed in his offices, and among other things stated that, "it is the best I have yet had any experience with, and I have had several kinds in my New York offices." He has since placed an order for installations in his residence.

This is the remark of the head of a well-known Catholic college concerning a reverend brother who was opposed to gas heat: "You remember the aversion Father ——— had for gas heat, however applied? Well, he's the happiest man living since you installed the heater in his room, and though very keen and sensitive as to unconsumed gas, he has never had the least reason for complaint."

Six thousand of the heaters have been installed since July, 1914. Those interested are invited to call and see them in operation at the office of the distributors, 305-7-9 Lick building, 35 Montgomery street, San Francisco, and also at 1764 Broadway, Oakland.

Medusa Patent Sustained

The United States Court of Appeals, Seventh Circuit, rendered a decision on January 4, 1915, fully affirming the decision of the U. S. District Court, Northern District of Illinois, rendered February 13, 1914, by which the Newberry patent No. 851247 was declared to be good and valid, and that the McCormick Waterproof Portland Cement Company infringed said patent. The Newberry patent covers the waterproofing compounds manufactured and sold by the Sandusky (Medusa) Portland Cement Company of Sandusky, Ohio.

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A Visit to W. P. Fuller & Co.'s Plant

The delightful weather, joined with the prospect of a boat ride, put the hundred or more architects and draughtsmen of the San Francisco Architectural Club (who had gathered on the Jackson Street Wharf on Saturday noon, April 3rd) in splendid humor, and it was a jolly party who embarked on the Fuller steamer "Sunol" for South San Francisco, where the W. P. Fuller & Co. factory is located.

W. P. Fuller, Jr., acted as host and he kept things moving from the start.

A bountiful luncheon was hardly finished before the inspection tour began and a corps of guides took the architects in charge. From the Mixed Paint factory, where the scientifically prepared line of one hundred or more colors and tints are ground, mixed and tested, the excursionists spread themselves over the various buildings in which Fuller Varnishes, Pioneer White Lead, Lubricating Oils, Automobile and Wagon Paints, Floor Stains and Floor Wax, together with several other specialties, are made. Particular interest seemed to be attached to the Varnish Factory, where the precious gums from Borneo, India, Africa, Australia and the Philippines are first cooked, mixed with oil and thinned with turpentine, afterwards being clarified, filtered, stored and aged. In the white lead factory the visitors watched the huge piles of pigs of lead which rapidly passed into the melting kettle, set for 750 degrees F. temperature, and they then noted the molten lead flow into molds and cast into perforated discs or "buckles." After this, the lead went into the corroding stacks, and passed into layers of earthenware pots piled one on another ten high, with intervening boards and tan bark. Here, during the one hundred day process, the melted pig lead is changed by chemical action to carbonate of lead, evolving into the hard, white porcelain-like substance with which we are familiar. Other processes, such as cleaning, purifying, mixing, tanking and testing, were watched with interest, and it was only when the guides informed the interested observers that they could continue their investigations by visiting the Miniature White Lead Plant which W. P. Fuller & Co. have installed in the Mines Building at the P.-P. I. E., that they were induced to embark on the homeward trip. The San Francisco dock was reached shortly before 6 o'clock and the well satisfied visitors gathered on the wharf and gave three ringing cheers for W. P. Fuller, Jr., and his assistants, and for their successful Home Industry Paint factory. The W. P. Fuller & Co. factory cost over a million dollars and is the largest of its kind west of Chicago and covers seventeen and one-half acres directly on the water front, with ample San Francisco railroad trackage, large docks, etc.

The following were included in the architects' party:

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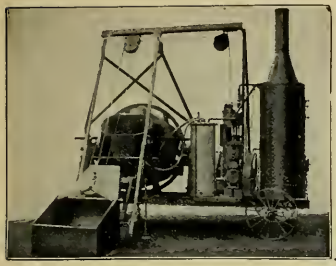
Architects Are Busy

Architects Rousseau & Rousseau, 110 Sutter street, San Francisco, announce that they have completed plans for a handsome residence to be erected in the Taylor Addition of San Mateo. The building will contain seven rooms besides sleeping porch and breakfast room.

The same architects have completed plans for a large one-story and basement brick building to be erected on the southwest corner of Seventh and Washington streets, Oakland, upon lot 100 x 150 feet. The building is so designed that two stories can be added later. When completed, this building will be used as a free market. It will cost $35,000.

The same architects report that they are completing plans for a large business block to be erected on the southeast corner of College avenue and Ashby street. The building is so designed to contain stores and each store will be modern and first-class in every particular. The exterior of the building is designed in the Classic style of architecture. It will be faced with fancy brick work and finished with a highly ornamented galvanized cornice.



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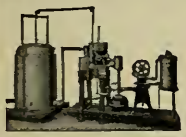

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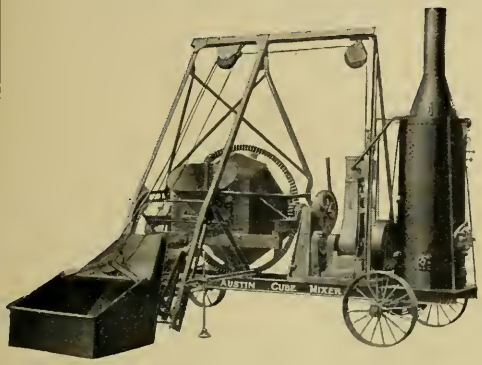

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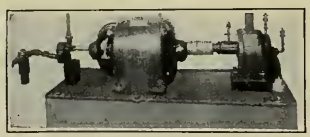

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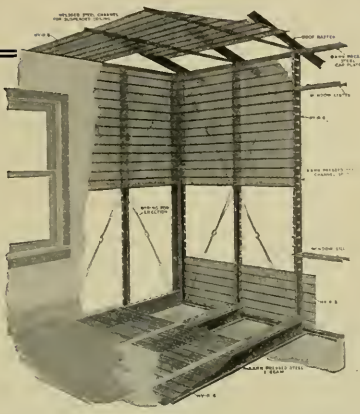

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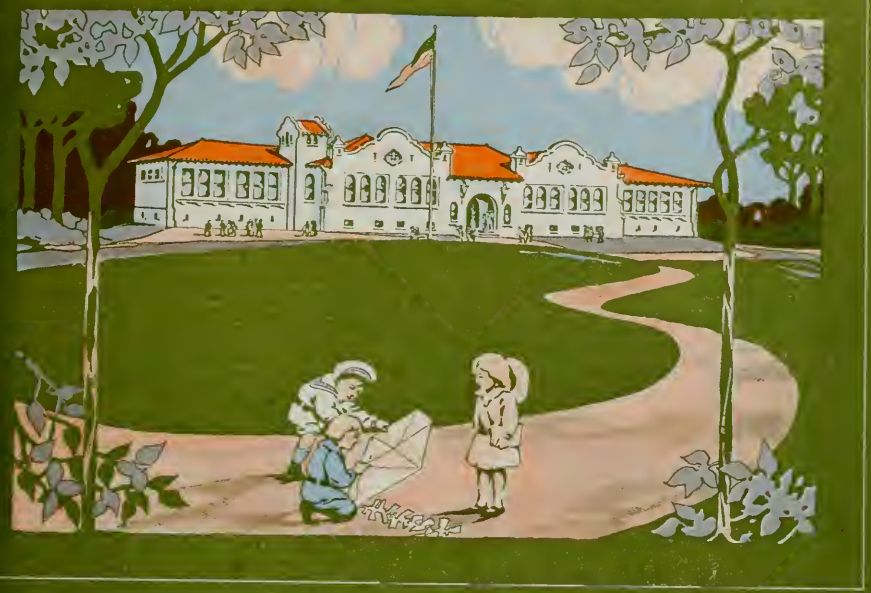

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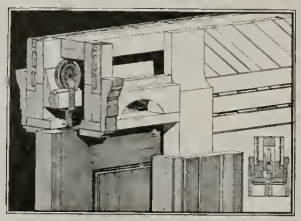

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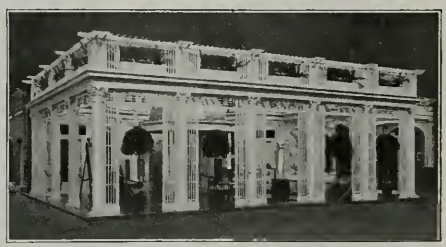

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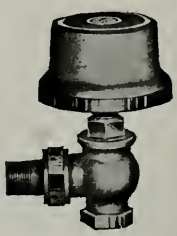

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Telephone Sunset 80. 6558. Home 24338.

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1638 Long Beach Ave., Los Angeles. 143 W. 42d St., New York City. 502 Westbank Bldg., San Francisco

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR WATERPROOF COATING —Continued.

Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.

Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)

CEMENT EXTERIOR FINISH

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.

Concrete Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.

Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

CEMENT TESTS—CHEMICAL ENGINEERS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

Fink & Schindler, 218 13th St., San Francisco.

CHUTES—GRAVITY SPIRAL

Insley Gravity System for pouring concrete, represented by Garfield Myers, Hearst Bldg., San Francisco.

COLD STORAGE PLANTS

Vulcan Iron Works, San Francisco.

T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

CLOCKS—TOWER

Decker Electrical Construction Co., 111 New Montgomery St., San Francisco.

COMPOSITION FLOORING

Fibrestone & Roofing Co., 971 Howard St., San Francisco.

COMPRESSED AIR CLEANERS

The B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.

Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.

Giant Stationary Suction Cleaner, San Francisco and Oakland.

Invincible Vacuum Cleaner, sold by R. W. Foyle, 149 New Montgomery St., San Francisco.

Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION

American Concrete Co., Humboldt Bank Bldg., San Francisco.

Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.

Foster, Vogt Co., Sharon Bldg., San Francisco.

P. A. Palmer, Monadnock Bldg., San Francisco.

International Concrete Construction Company, West Berkeley, Cal.

CONCRETE GRAVITY CHUTE

Insley Mfg. Co., represented by Garfield Myers, Hearst Bldg., San Francisco.

CONCRETE MACHINERY

Garfield Myers, factory representative of Insley Manufacturing Company, and Marsh-Capron Company, Hearst Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. Factory branch. 473-485 Sixth St., San Francisco.

Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.

CONCRETE PILES

McArthur Concrete Pile Company, Chronicle Building, San Francisco.

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

Clinton Welded Reinforcing System, L. A. Norris, 140 Townsend St., San Francisco.

"Kahn System," see advertisement on page 31, this issue.

International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

Triangle Mesh Fabric. Sales Agents, Pacific Building Materials Co., 523 Market St., San Francisco.

Twisted Bars, sold by Woods & Huddart, 444 Market St., San Francisco.

CONCRETE SURFACING

"Concreta" sold by W. P. Fuller & Co., San Francisco.

Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.

Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier. Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

Underwriters' Labelled Fire Doors and Windows—Kalamein Interior Metal Doors and Trim — Metal Corner Bead — Metal Furniture, etc.

Capitol Sheet Metal Works INC.

Manufacturer of

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Oakland Office and Factory, 117-119 FRANKLIN STREET

Telephone Sutter 4765

GASPARD & HAMMOND

BUILDING CONSTRUCTION

425 Sharon Building, 55 New Montgomery St. San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL

American Concrete Co., Humboldt Bank Bldg., San Francisco.
Arthur W. Biggers, 112 Market St., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
Collman & Collman, 526 Sharon Bldg., San Francisco.
Construction & Engineering Co., Hobart Bldg., San Francisco.
M. Fisher, California-Pacific Bldg., San Francisco.
Foster, Vogt Co., Sharon Bldg., San Francisco.
Gaspard & Hammond, Sharon Bldg., San Francisco. (See card above.)
Howard S. Williams, Hearst Bldg., San Francisco.
Harvey A. Klyce, Sheldon Bldg., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
Lester Stock, 12 Geary St., San Francisco.
McLaren & Peterson, Sharon Bldg., San Francisco.
R. W. Moller, 185 Stevenson St., San Francisco.
John Monk, 216 Sharon Bldg., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
Burt T. Owsley, 311 Sharon Bldg., San Francisco.
Robert Trost, 26th and Folsom Sts., San Francisco.
Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.
Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

CORK FLOORING

"Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

CORNER BAR

Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BEAD

Capitol Sheet Metal Works, 1827 Market St,, San Francisco.
United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK

Grant Gravel Co., Flat Iron Bldg., San Francisco.
Niles Rock, sold by California Building Material Company, new Call Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
Imperial Co., 183 Stevenson St., San Francisco.
Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.
Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

DOOR HANGERS

McCabe Hanger Mfg. Co., New York, N. Y.
Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
Crane Company, San Francisco, Oakland, and Los Angeles.
J. B. Clow & Son, Hearst Bldg., San Francisco.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Engineering Co., 683 Howard St., San Francisco.
Central Electric Co., 185 Stevenson St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

ELECTRICAL ENGINEERS

Chas. T. Phillips, Pacific Bldg., San Francisco.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS

Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.
Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
B. C. Van Emon Elevator Co., 235 First St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS

Elevator Supply & Repair Co., Underwood Bldg., San Francisco

ELEVATOR ENCLOSURES

J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

MORTENSON CONSTRUCTION CO.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

ENGINEERS
F. J. Amweg, 700 Marston Bldg., San Francisco.
W. W. Breite, Clunie Bldg., San Francisco.
L. M. Hausmann, Sharon Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

EXCAVATING CONTRACTORS
Pacific Excavator Company, Hearst Bldg., San Francisco.

FIRE EXIT DEVICES
Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.

FIRE ESCAPES
Burnett Iron Works, Fresno, Cal.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIRE BRICK
Livermore Fire Brick Co., Livermore, Cal.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
Glidden Products, sold by Whittier-Coburn Co., San Francisco; and California Glass & Paint Company, Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. J. Forbes & Son, 1530 Filbert St., San Francisco.
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
T. H. Meek Co., 1157 Mission St., San Francisco.

FLAG POLES—TACKLE, ETC.
Pacific Foundry Company, Harrison and 18th Sts., San Francisco.

FLAG POLE TOPS
Bolander & Hallawell, 270 First St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

FLOORING—MAGNESITE
Fibrestone & Roofing Co., 971 Howard St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

GAS FURNACES
Cole Gas Furnace, Fisher & Klauser, distributors, Lick Bldg., San Francisco, 1764 Broadway, Oakland.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

GARDEN FURNITURE
G. Tomagnini & Co., 219 Tenth St., San Francisco.
O. S. Sarsi, 123 Oak St., San Francisco.

GAS GENERATORS
Utility Gas Generator Co., 340 Sansome St., San Francisco.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRADING CONTRACTORS
Pacific Excavator Company, Hearst Bldg., San Francisco.

GRANITE
California Granite Co., Sharon Bldg., San Francisco.
Raymond Granite Co., Division and Potrero Sts., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Grant Gravel Co., Flatiron Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.
American Keene Cement Co., 333 Monadnock Bldg., San Francisco.
"Empire" Hardwall Plaster, Pacific Portland Cement Company, Pacific Bldg., San Francisco.

HARDWARE
Corbin Hardware sold by Baker & Hamilton, San Francisco and Los Angeles.
Russwin Hardware, Joost Bros., San Francisco.
Pacific Hardware & Steel Company, representing Lockwood Hardware Co., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
Russell & Erwin Manufacturing Co., Commercial Bldg., San Francisco.

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The American Hardware Corporation, Successor

New Britain, Conn. 833 Market Street, SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heater Company, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- J. M. Boscus, 975 Howard St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Charles T. Phillips, Pacific Building, San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.

HEAT REGULATION
- G. E. Witt Company, Inc., 850 Howard St., San Francisco.
- Johnson Service Company, 149 Fifth St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Ochsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

IRONING BOARDS
- Merritt Patent Ironing Board, sold by A. Hommel, agent, Atlanta Hotel, San Francisco.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
- American Keene Cement Co., Monadnock Bldg., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.
- E. K. Wood Lumber Company, East Oakland, California.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Tilden Lumber Company, foot of University Ave., Berkeley, Cal.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

MARBLE
- G. Tomagnini & Co., 219 Tenth St., San Francisco.
- Sculptors' Workshop.

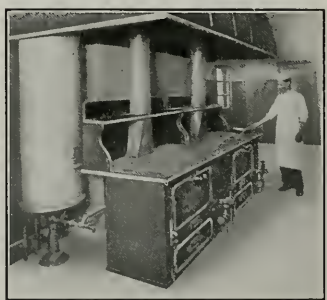
METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Second and Federal Sts., San Francisco.
- L. A. Norris & Co., 140 Townsend St., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco; 117 Franklin St., Oakland.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco.
- Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.
- Capitol Sheet Metal Works, San Francisco and Oakland.

METAL SHINGLES
- Meurer Bros., 630 Third St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.



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Sales Office :: Howard and Beale Streets, San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
- American Standard Oil Burner Co., Seventh and Cedar Sts., Oakland.
- S. T. Johnson Co. (see adv. below).
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- Rotary Oil Burner Company, 159 Twelfth St., Oakland.
- G. E. Witt Oil Burner Company, 850 Howard St., San Francisco.

ORNAMENTAL IRON AND BRONZE
- American Art Metal Works, 13 Grace St., San Francisco.
- Brode Iron Works, 31-37 Hawthorne St., San Francisco.
- Burnett Iron Works, Fresno.
- Palm Iron & Bridge Works, Sacramento.
- California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
- Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
- Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
- D. Zelinsky, 564 Eddy St., San Francisco.

PAINT FOR CEMENT
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Concreto Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)

PAINTS, OILS, ETC.
- Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.
- W. P. Fuller & Co., all principal Coast cities.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
- California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
- California Photo Engraving Co., 121 Second St., San Francisco.

PHOTOGRAPHY
- R. J. Waters Co., 717 Market St., San Francisco.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, 985 Folsom St., San Francisco.
- C. C. Morehouse, Crocker Bldg., San Francisco.
- J. J. Connolly & Son, Builders' Exchange, San Francisco.

PLUMBING
- Boscus Bros., 975 Howard St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco

PLUMBING FIXTURES. MATERIALS, ETC.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Crane Co., Second and Brannan Sts., San Francisco.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
- Glauber Brass Manufacturing Company, 1107 Mission St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 133 Kearny St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PUMPS
- Chicago Pump Company, 612 Howard street, San Francisco.

REFRIGERATORS
- McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
- Vulcan Iron Works, San Francisco.

PACIFIC=PLATE BLACKBOARD

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Auditorium Seating School Furniture

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

REVERSIBLE WINDOWS
Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Pacific Building Materials Co., 523 Market St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco.
Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
Grant Gravel Co., Flat Iron Bldg., San Francisco.
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
National Roofing Company, Plaza Bldg., Oakland.
"Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
Mackenzie Roof Co., 425 15th St., Oakland.
United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
M. G. West Co., 353 Market St., San Francisco.

SANITARY DRINKING FOUNTAINS
N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.
J. B. Clow & Son., Hearst Bldg., San Francisco.

SANITARY BATH FIXTURE
"Boudoir" bath tub, mfrd. by Improved Sanitary Fixture Co., 411 S. Los Angeles St., Los Angeles. Sold by all plumbing houses.

SANITARY KITCHEN SINK
Improved Sanitary Fixture Company, 411 S. Los Angeles St., Los Angeles.

SASH CORD
Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.
A. H. Andrews & Co., 728 Mission St., San Francisco.

SEWAGE EJECTORS
Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK, SKYLIGHTS, ETC.
Capitol Sheet Metal Works, 1927 Market St., San Francisco.
U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
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Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Brode Iron Works, 31 Hawthorne St., San Francisco.
Judson Manufacturing Co., 819 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, agents, 135 Kearny St., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J. 3435, 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, Twentieth and Indiana Sts., San Francisco.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.
Woods & Huddart, 444 Market St., San Francisco.

STEEL PRESERVATIVES
Wadsworth, Howland & Co., Boston Mass. (See Adv. for Coast agencies.)

STEEL BARS FOR CONCRETE
Kahn and Rib Bars, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Woods & Huddart, 444 Market St., San Francisco.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

STEEL FIREPROOF WINDOWS
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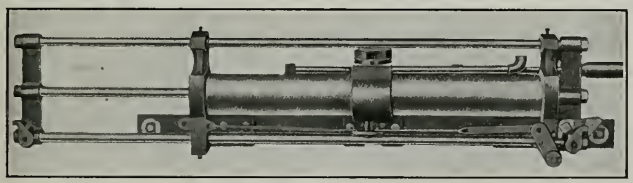

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STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., W. W. Thurston, Rialto Bldg., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STONE
California Granite Co., 518 Sharon Bldg., San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
Colusa Sandstone Co., Potrero Ave. and Division St., San Francisco.

STORAGE SYSTEMS—GASOLINE, OIL, ETC.
S. F. Bowser & Co., 612 Howard St., San Francisco.

SURETY BONDS
Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
J. B. Nabors & Sons, Kohl Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland, Mills Bldg., San Francisco.
Pacific Coast Casualty Co., Merchants' Exchange Bldg., San Francisco.

TEMPERATURE REGULATION
Johnson Service Company, 149 Fifth St., San Francisco.
G. E. Witt Company, Inc., 850 Howard St., San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.

TELEPHONE EQUIPMENT
Telephone Electric Equipment Co., 612 Howard St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 561 Mission St., San Francisco.

TILE FOR ROOFING
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Denison Hollow Interlocking Blocks, Ochsner Bldg., Sacramento.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
Western States Porcelain Co., Richmond, Cal.

VACUUM CLEANERS
Giant Stationary Suction Cleaner, manufactured by Giant Suction Cleaner Co., 731 Folsom St., San Francisco and Third and Jefferson Sts., Oakland.
Invincible Vacuum Cleaner, R. W. Foyle, Agent, San Francisco.
"Tuec" Air Cleaner, manufactured by United Electric Co., 110 Jessie St., San Francisco.

VALVES
Jenkins Bros., 247 Mission St., San Francisco.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
Glidden Varnish Co., Cleveland, O., represented on the Pacific Coast by Whittier-Coburn Co., San Francisco.
Standard Varnish Works, 113 Front St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 365 Market St., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 237 Powell St., San Francisco, and Thirteenth and Clay Sts., Oakland.
Hoffman Heater Co., 397 Sutter St., San Francisco.

WALL BEDS
Marsball & Stearns Co., 1154 Phelan Bldg., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Concreto Cement Coating, manufactured by the Muralo Co. (See page 124.)
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Glidden's Concrete Floor Dressing and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
Imperial Co., 183 Stevenson St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Wadsworth, Howland & Co., Inc. (See Adv. for Coast agencies.)

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

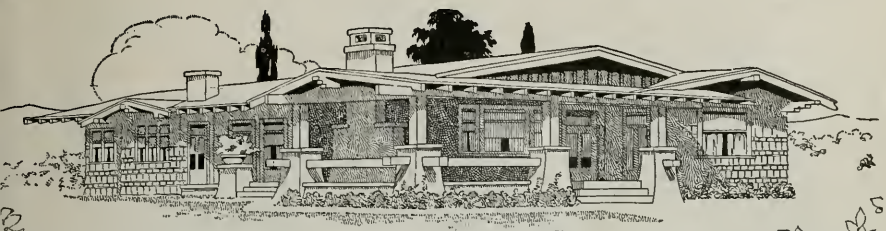
WHITE ENAMEL FINISH
"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Satinette," Standard Varnish Works, 113 Front St., San Francisco.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Co. (See Adv. for Coast distributors.

WINDOWS—REVERSIBLE, ETC.
Perfection Reversible Window Co., 2025 Market St., San Francisco.
Whitney Adjustable Window Co., San Francisco. (See page 25.)
Hauser Reversible Window Co., Balboa Bldg., San Francisco.

WINDOW SHADES
Top Light Shade Co., 737 Market St., Oakland.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
L. A. Norris Co., 140 Townsend St., San Francisco.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 561 Mission St., San Francisco.



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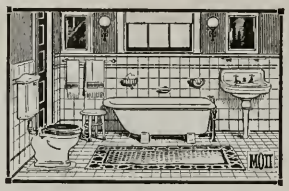

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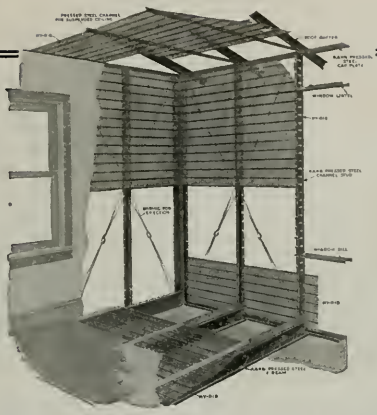

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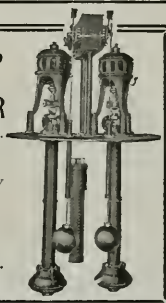

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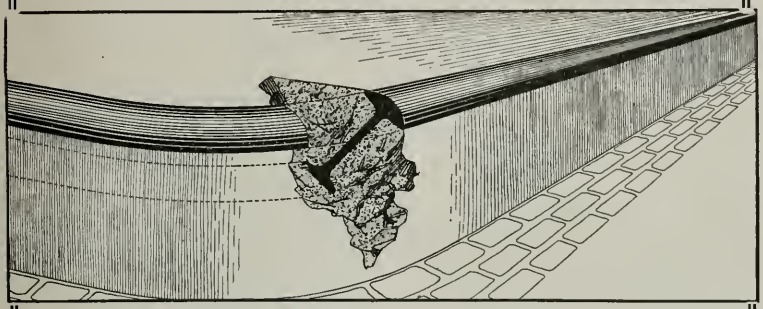

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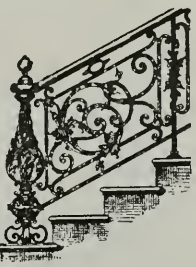

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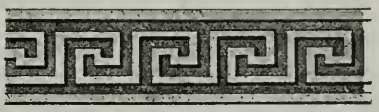

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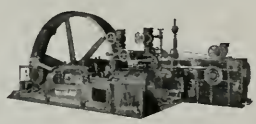

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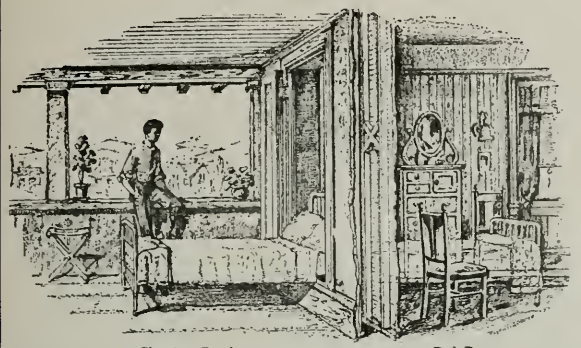

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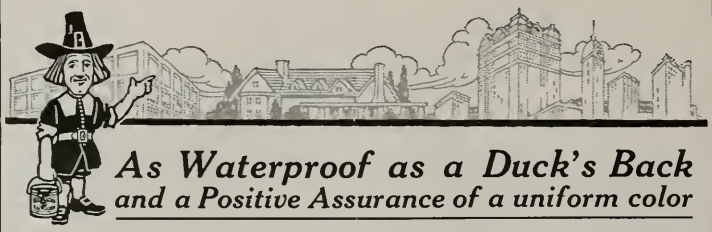

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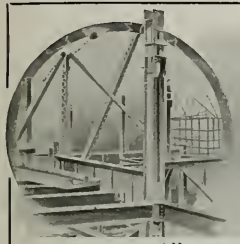

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WOODLAND HIGH SCHOOL, WOODLAND, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

Frontispiece
The Architect and Engineer
of California
May, 1915.

The Architect and Engineer

Of California

Vol. XLI. No. 2.

The Work of Mr. William H. Weeks, Architect

By B. J. S. CAHILL, A. I. A.

THE poet, Walt Whitman, who is read everywhere more than in his own country, made the claim that he sang "The Common Average Man." In all his writings he insists that he is the representative, the voice of the plain people. He made long poems, catalogues of trades, in which he celebrates the everyday occupations of the masses. He made poems about hatters, longshoremen, clerks and clam diggers. But the consequence of it all is that none of this type of people ever did or could or would read a line of Whitman. If they read poetry at all, they much prefer Ella Wheeler Wilcox. As a matter of fact the rank and file, the common ruck of mankind, are not successfully celebrated by poets and prophets. There is apparently no valid reason why they should be celebrated at all. The man to excite poetic attention is not the man who remains in the ranks, but the man who steps out of them. The "average" man being neither above nor below his fellows, is not even seen, much less sung. Perhaps, after all, it is a sense of injustice to the high valor of the average man who really carries forward the main business of life, on his broad collective shoulders that has excited men like Whitman and Lincoln to extol the toilers and sing the praises of "the plain citizen."

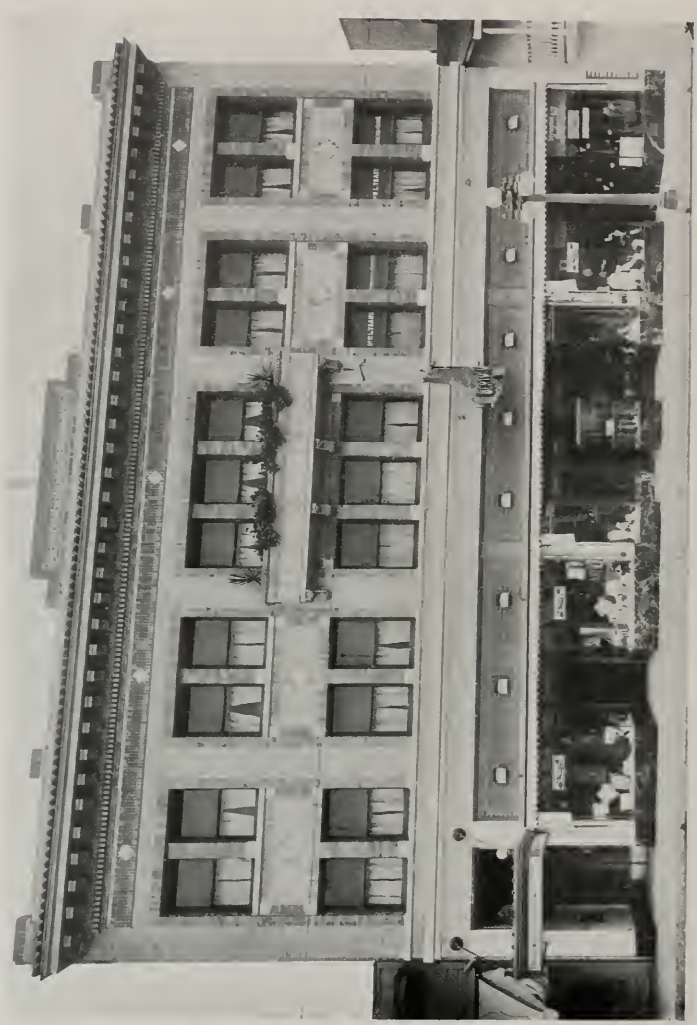
Now, in each walk of life, in each profession, just as in humanity at large, there are the conspicuous exotic individuals and the average type who do the plain work of every-day life. The great opera singer is a fine example of the exotic individual. But how much of real life is grand opera? How much of the profession of architecture is concerned with the grand monuments of a metropolis? All the sumptuous examples of construction that one associates with the leading big cities of this country are as nothing in comparison to the vast bulk of average and inconspicuous buildings throughout the smaller towns of the country at large. For the United States is still an agricultural country before everything else, and our rural population—including the small town—is the real type of our country at large. All this is in striking contrast to Australia, for example, where urbanization is rapidly

HOTEL GLEN, SAN FRANCISCO, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

replacing ruralization. As long, therefore, as states show strong decentralized settlement as now, so general in the East, so long will the small country towns give us the real type and standard of life in the various states of this the greatest farming community on the face of the globe. Now this vast diffused galaxy of rural settlements which dots the map of every state in the union, wherever there is a small town, has its own representative architecture no less than the big cities of the first magnitude. This architecture naturally expresses itself in those buildings typical of semi-rural life, the county seat or courthouse, the local bank, the high school, and the public library. In addition to these will be a church or two, a few business blocks of some pretension, including a hotel and perhaps, if the district enjoys exceptional climate or is favored with mineral springs or other natural attractions, a summer resort and possibly a sanatorium. Now all of these buildings are necessarily moderate in size and built with moderate outlay. Their cost may range from ten thousand to one hundred and fifty thousand dollars. And right here is presented a very interesting and really important problem. That is to develop the right kind of architects for these many varied problems in planning and design.

I have often pointed out the analogies between dress and architecture. A man with good taste can go into a cheap store and buy a necktie for 25 cents which will both look and be all right. But if he has not the good taste of a gentleman he had much better go into a smart shop and pay $2.50 and he will be safeguarded. He cannot go wrong because in the high-priced place the buyers for the house have already made a selection which excludes anything garish or vulgar. That is what high-priced haberdashers exist for. Now if a small-town property owner wants a building in good taste he must either spend plenty of money and import an architect or run the risk of getting something very poor, because there is not enough money to be spent to insure the avoidance of bad taste, etc. But right here we are up against the dismal fact that the small town property owner too often has the poorest kind of taste and largest amount of misinformation about architecture. And to this ignorance very often indeed is added a very generous fund of impenetrable conceit. The self-esteem of the average magnate of a moderate town is inconceivable to those of us who have never encountered it. He is the big frog in the small pond. His standards are all false and his notion of constructive appropriateness are often unbelievably crude. The case is even worse in dealing with a provincial board of education or town council, where the members as often as not will include a barber, a tinsmith and the local horseshoer—all good men and true, of course, but with amusing notions of what the local school or courthouse should look like. I have chosen examples from actual experience. Oddly enough the aspirations of such men—the "plain men" of the community, so called—do not at all run to plain architecture. O dear no! They are for the two-bit necktie, but they will select the gaudiest one in the store. With them the flossy sketch wins. Albeit occasionally one comes across some councilman who has learned about the evils of what is generically called "gingerbread." He will have none of it. All ornament whatsoever is brushed aside by this purist as "gingerbread," and you can see by this attitude that you are not dealing with any crude countryman. This man knows a thing or two.

Another peculiarity of the countryman dwelling in a town is his distrust of all that he is really familiar with. I have heard men who were raised in the lumber belt express the greatest contempt for one of the cleverest and cosiest of shingled buildings because where he came from the very barns



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Wm. H. Weeks, Architect

and cowsheds were covered with shingles. What he admired was millwork and paint. On these lines I remember marvelling at the most pretentious public building in a small town called Rat Portage, near Lake Superior. This district lies on the great geological outcrop of granite known as the Laurentian formation of Western Canada. The buildings thereabouts are built of native granite, great glistening spalls of it taken from the fields. The rough stables, sheds and farmhouses built of it without thought of effect are beautiful and picturesque in the extreme. But because rock faced granite was common and cheap the public building I spoke of must be "different"; also expensive. So at great cost the local builders had imported by rail from a great distance several flat cars loaded

THOMAS BROWN BUILDING, MONTEREY, CALIFORNIA
Wm. H. Weeks, Architect

with yellow pressed brick, and of these the principal fronts were laboriously and hideously decorated, while the rear and side walls were built of granite rubble—the only parts of the building worth looking at.

Now, from all this it will be realized that the architect of country town work has an extremely difficult task before him. And of course we assume that the architect must solve his problems as they should be solved in the interest of clean planning and sound design: that he should insist on these things and give his clients what they ought to have rather than what they want, or begin by thinking what they want. If he does not do these things he is not doing his duty. He is not contributing to the uplift of the profession and he would not be worthy of exploitation in these pages.

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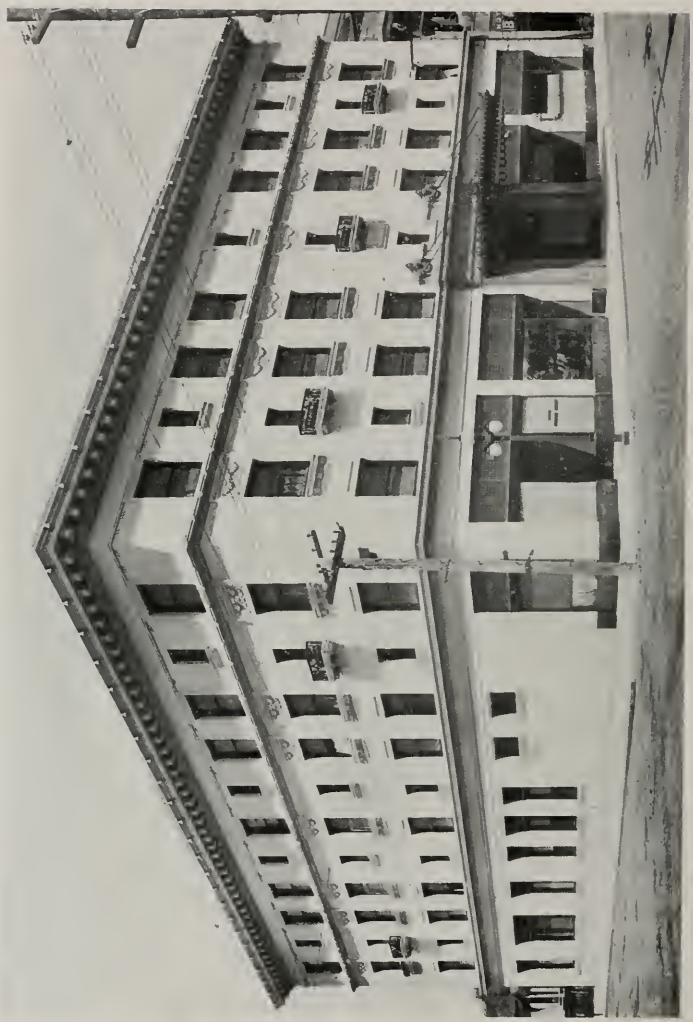

HOTEL APPLETON, WATSONVILLE, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

No architect in California has planned anywhere near as many buildings throughout the state as Mr. W. H. Weeks of San Francisco. His output is truly remarkable. He is himself the authority for the statement that in the eighteen years of his practice to date he has planned and superintended over a thousand buildings! He began his professional career in making plans for the Spreckels Sugar Company and in the neighborhood of Watsonville has built over two hundred buildings for this concern alone. During his career so far Mr. Weeks assures us that he has constantly in course of construction from thirty to forty buildings in various parts of the state. Most of these are public school buildings. Next in order come bank buildings, libraries and business blocks. No attempt could possibly be made to show anything like all or even a large part of these various structures. It would take several volumes of The Architect and Engineer. And in order to make new pictures of them all a photographer would have to travel some thousands of miles and expose some thousands of plates.

Considering the difficulties that attend the planning of buildings for provincial towns, the standards that prevail and the general tendency of such work to be over showy and trivial in character, the examples here shown of schools, banks, libraries and buildings generally are of a remarkably high order of merit. Dignity, simplicity and restraint prevail throughout this work to an unexpected extent. Indeed, we can have no hesitation in saying that such a leaven of excellently planned and cleanly designed buildings throughout the state must have exerted a wonderful influence for good and helped other architects noticeably to attain higher standards by far than usually prevail in smaller cities. The merit of these buildings architecturally speaking would be far more apparent if it were possible in every instance to give a picture also of some other building in the same town. Every one of my readers has only to think for a moment of any country town that he is familiar with to recall the cupolas, the excrescences, the vagaries and fantasies of design that are the salient characteristics of bucolic architecture throughout the states and especially in the West.

Mr. Weeks is essentially the architect of the plain citizen—the average owner, whether he has individual or collective corporate existence. For such owners architectural problems are direct and simple. Plans must serve very plain and practical ends and in all cases design must be well within the scope of local craftsmanship. Above all the cost must not exceed the appropriation. An architect who has the experience to command confidence can, if he chooses, practically dictate the style of design. And hence it is that with his enormous experience Mr. Weeks has been able to overcome the questionable standards of much small-town work and achieve the surprising successes here shown.

* * * * * *

Mr. Weeks has made a special study of school house planning. Here is a problem which is constantly presenting itself to the public trustees of every community. We said above that throughout the United States agriculture was still by far the most important source of income. We might add that in the expenditure of public moneys education is in like manner the most important item; not perhaps in gross figures, but in the fact that the American public above all things will provide generously all money for schools and school houses. According to the figures of Commissioner of Education Philander P. Claxton there were in the United States in 1911 no less than 165,000 public school buildings, each having from two to twenty-four class rooms.

HOTEL FOR THE JUDSON ESTATE, SAN FRANCISCO
WILLIAM H. WEEKS, ARCHITECT

PAISLEY HOTEL, SAN FRANCISCO, CALIFORNIA
Wm. H. Weeks, Architect

In planning the school house the architect is confronted with several conflicting standards or ideals, each having its supporters or votaries. There are of course the new thought, up-to-the-minute enthusiasts, who clamor for out-door class rooms, window gardening and bungalow effects. Then there are the hard-headed economists who are scornful of what they call fads and look for any scheme of planning that provides the most class room for the least outlay. As we said above, it is the average problem solved in a normal average way that has made such an appeal to Mr. Weeks. On these lines Mr. Weeks has favored a two-story school plan with a basement as the normal type yielding the best results in accommodation, appearance and outlay. And it is the happy combination of these three that makes the real solution of the school house problem as it presents itself to the average board. Herein lies the strength of Mr. Weeks. He meets the situation as it is without undue desire to proselytize his

OFFICE BUILDING FOR PORTER ESTATE, WOODLAND
Wm. H. Weeks, Architect

ENTRANCE, PORTER BUILDING, WOODLAND, CALIFORNIA
Wm. H. Weeks, Architect

clients; to advocate untried novelties or indulge in experiments likely to inflate the outlay. In other words, he is a safe man. His large experience guarantees this. The trustee instinctively trusts him and in all his long list of school house contracts he recalls but one in which the contractors' bids in the aggregate were in excess of the legal appropriation. This fact, coupled with the high standard of design and the clean, simple planning, are the three main elements which have contributed to Mr. Weeks' extraordinary success in school building. And what we here say of schools applies with equal force to all the rest of his work.

It will be noted that the school designs come under three heads. The classic, notable examples of which are the Woodland, Willows and Santa Rosa high schools and others of this type which are first shown. Then we have two examples of the California Mission style in Monterey and Glen County schools. And finally we have a very successful design in Tudor or Collegiate Gothic for the grammar school at Woodland.

The bank buildings illustrated are all of a high order of merit, the banks of Arcata and San Leandro in particular being excellent examples of finished design that could not be improved upon.

The libraries shown are a very small proportion of the total output, but give one a good idea of the clean, simple style adopted, always restrained and temperate without being dry or monotonous.

The miscellaneous buildings shown include business blocks, theaters, homes and churches. One might single out an excellently proportioned Y. M. C. A. for Watsonville, a very interesting M. E. church at Palo Alto, and a dignified court house at Elko, Nev.

The Blanchard residence at San Jose has a fine quality of simplicity and charm.

Of the business blocks it would be difficult to conceive of anything in better proportion or of more sedate poise than the Letteunich building in Watsonville.

And again, what could be more sensible, more satisfactory and simple than the little business block in Monterey, the Underwood building?

For the rest, the pictures here given will speak for themselves.

* * *

Some Notes on School Planning

By W. H. WEEKS, Architect

THE important problem with the School Board when ready to build the school is the selection of the design for the new building, one that will fulfill all requirements of style and arrangement, when judged by the best standards of school work.

In the smaller cities no other public edifice so intimately concerns so many people as the public school building.

Beautiful architecture expressed through the medium of a well designed school building is an important point to consider in the selection of the school design, for aside from the educational value to the child, good architecture is one of the greatest assets in the building up of a community, adding to one's civic pride, and making a favorable impression on the home-seeker.

The controlling element in the design of any school building is the class room and its approach, therefore all else in a general way must be subsidiary to this.

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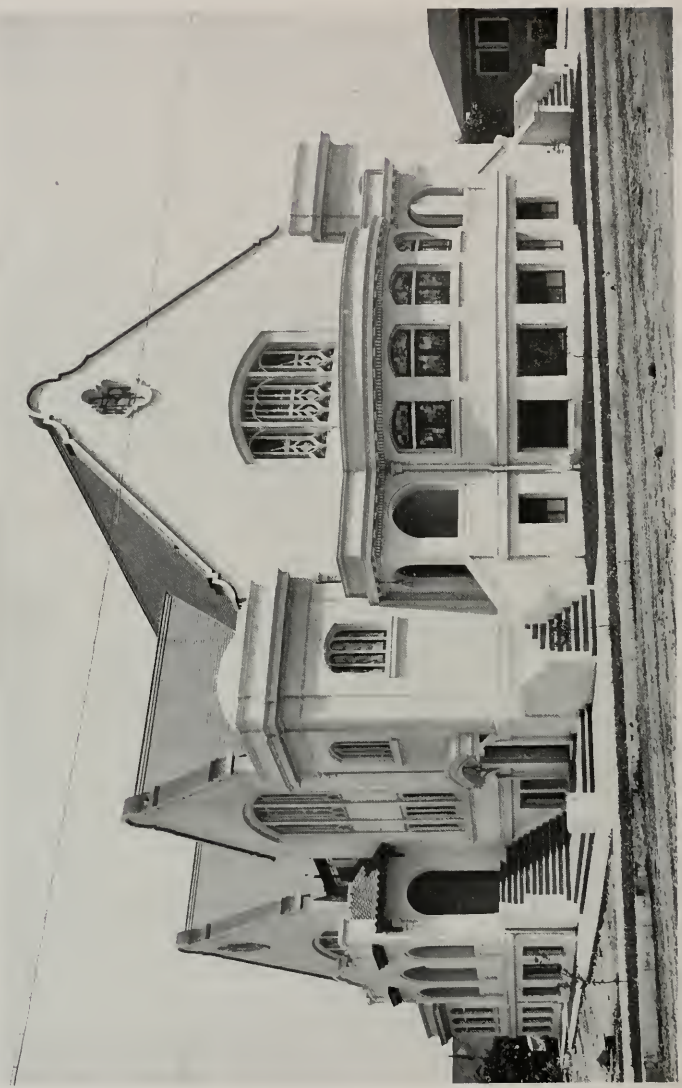


METHODIST EPISCOPAL CHURCH, PALO ALTO, CALIFORNIA
WILLIAM H. WEEKS,
ARCHITECT

The designing of the grade school is a simple problem compared with the planning of the modern high school, which is becoming more and more complex; each community requiring special study in order to properly provide for the various increasing needs.

In this brief article it is impossible to give rules for the selection of a satisfactory plan. Every part and detail of the school is important and all should be carefully considered. A few suggestions, however, will not come amiss.

The selection of the design will depend largely on the location, exposure, and size of ground available. Serious and costly mistakes have been made in some of the latest school buildings erected in California by not adapting the building to the site. Designs calling for one-story schools in congested centers of our large cities, where ground space is costly and restricted, using up valuable playground space and not providing the necessary shelter for children in inclement weather should not be considered.

In selecting a design, where considerable room is needed for a little money, it is well to remember that the two-story and basement type is the cheapest. The two-story building next and the one-story the most expensive, basing the estimate on the same floor area in each.

Orientation is so very important a consideration in the school design that no building can be made a complete success without close study of desirable exposure and plans made accordingly. In many of our interior counties a south and west exposure are quite undesirable, while in the coast counties the north is equally undesirable.

Designs showing high brick walls supporting heavy tile roofs should not be considered, unless a steel frame is provided or the walls be well reinforced against earthquake shock.

Plans for schools over one story in height should provide for fireproof stairways, and the corridor floors should be fireproof where possible. The more curves, offsets and angles in a building the greater the cost.

Heating and ventilating systems costing less than six per cent of the cost of the building usually prove inefficient. Systems costing over ten per cent of the cost are extravagantly planned and unnecessarily expensive to operate.

Heating, ventilating, lighting and sanitation are essential details of the design and are such important parts of the school plan that serious defects in any one would condemn the whole.

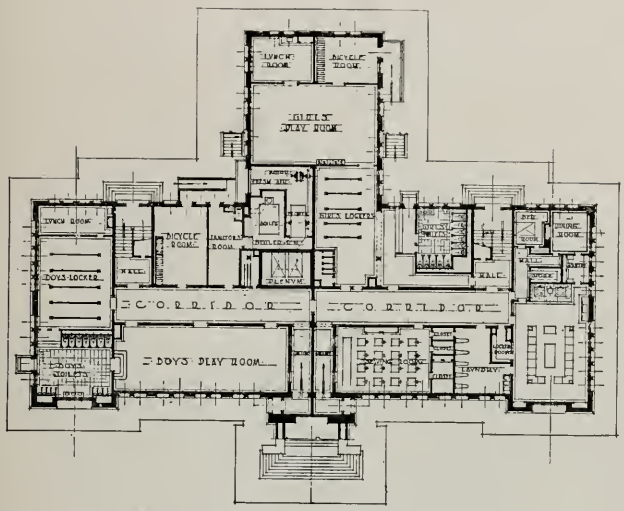
The style of architecture, suited to a particular building, will depend largely on the location and its importance to other buildings in a community.

The styles most popular, at the present time, are Classic, Tudor, Gothic and in our own state, Mission.

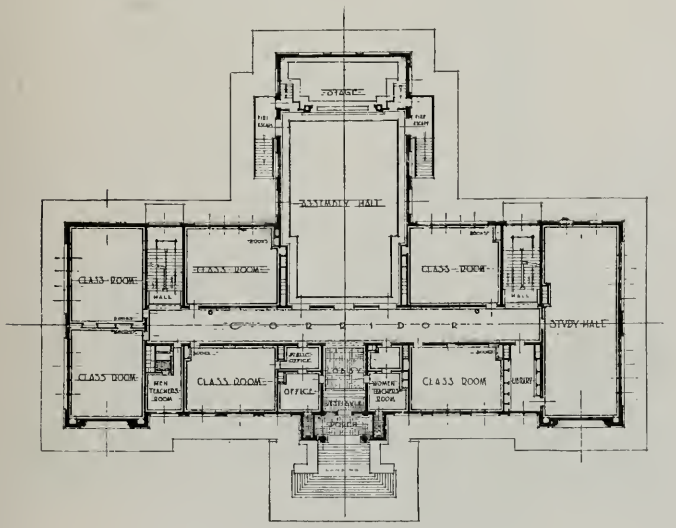
In regard to the original styles advocated by some architects there is no disputing the fact that a number of them have produced some fine examples, pleasing in outline and well adapted to the school needs. These original types may please at first on account of their originality, but lose favor in repetition. The most important thing to consider in the final selection is whether the architect favored is one experienced and fully capable to direct and to carry the work to a successful completion, and whether he has the necessary practical knowledge and business ability, to direct the progress of the work.

The Trustees should bear in mind the fact that their reputation as well as that of the architect will suffer if the building is improperly designed or shows defects through incompetent planning or supervision. They should realize therefore the importance of selecting a capable architect.

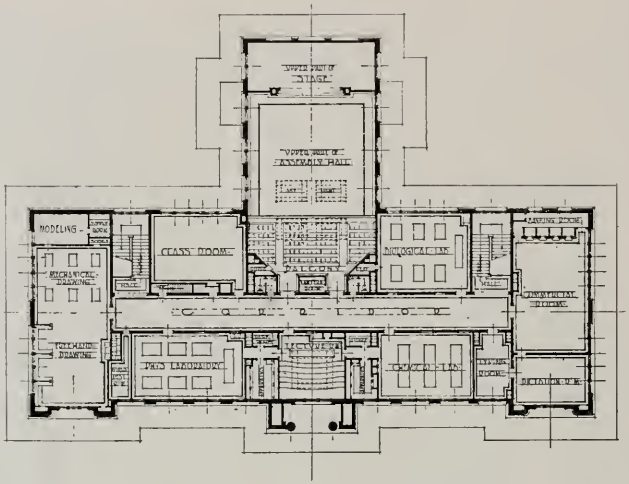
DETAIL OF ENTRANCE, WOODLAND HIGH SCHOOL
WILLIAM H. WEEKS, ARCHITECT



BASEMENT PLAN, WOODLAND HIGH SCHOOL

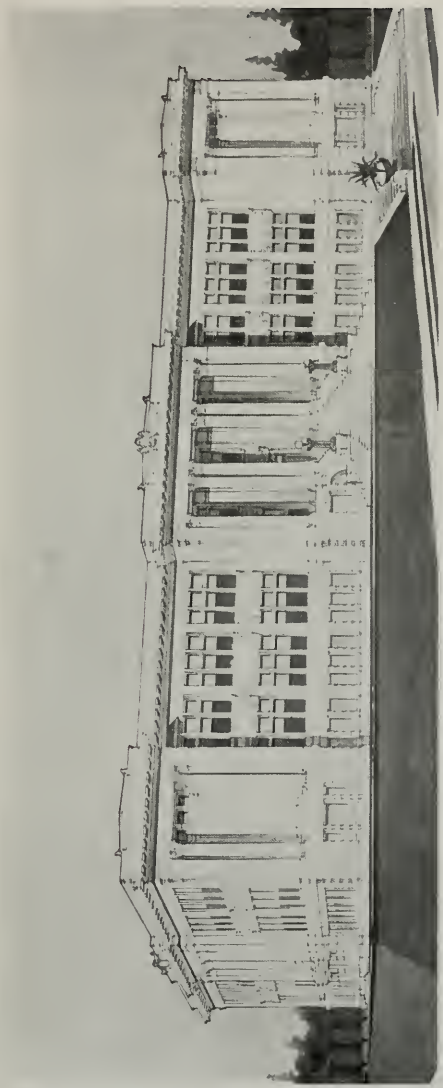


FIRST FLOOR PLAN, WOODLAND HIGH SCHOOL



SECOND FLOOR PLAN, WOODLAND HIGH SCHOOL

SANTA ROSA HIGH SCHOOL
Wm. H. Weeks, Architect



SANTA CRUZ HIGH SCHOOL
WM. H. WEEKS, ARCHITECT

ENTRANCE AND COLONNADE
SANTA ROSA HIGH SCHOOL ANNEX
WILLIAM H. WEEKS, ARCHITECT

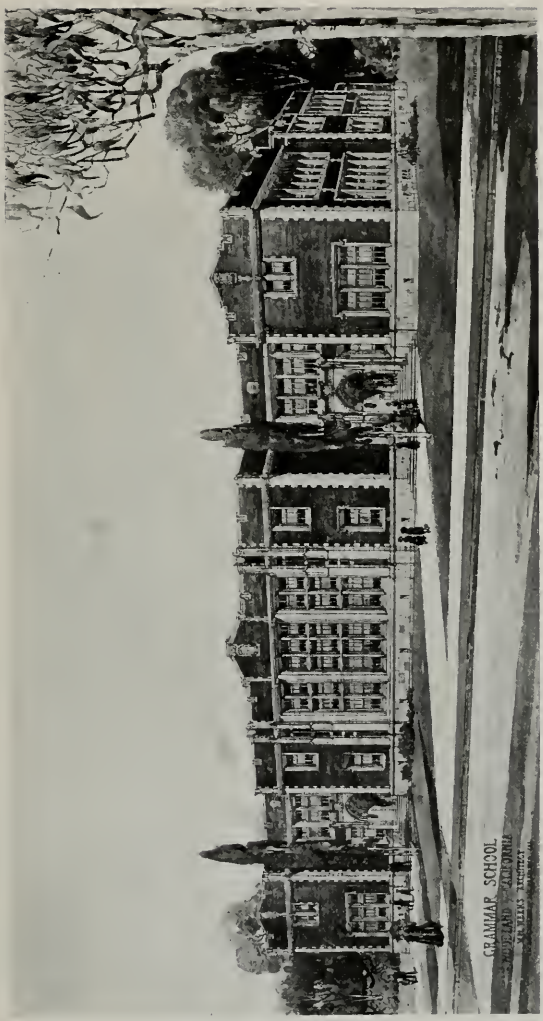
ENTRANCE, WILLOWS HIGH SCHOOL *Wm. H. Weeks, Architect*

DISTRICT SCHOOL, GLEN COUNTY, CALIFORNIA

WILLOWS HIGH SCHOOL, WILLOWS, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

BURLINGAME GRAMMAR SCHOOL
BURLINGAME, CALIFORNIA
WM. H. WEEKS, ARCHITECT

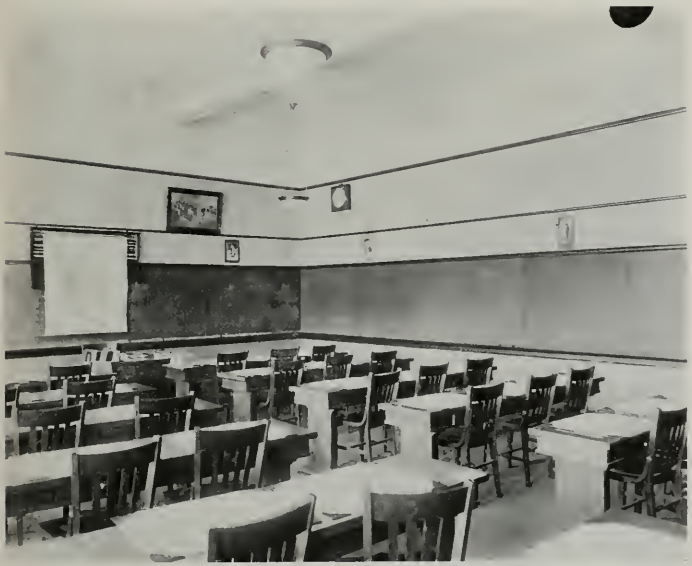
HIGH SCHOOL BUILDING
MONTEREY, CALIFORNIA
WM. H. WEEKS, ARCHITECT



GRAMMAR SCHOOL BUILDING
WOODLAND, CALIFORNIA
H. M. H. WEEKS, ARCHITECT

EUREKA HIGH SCHOOL, EUREKA, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

GRAMMAR SCHOOL BUILDING, SANTA CRUZ, CALIFORNIA
Wm. H. Weeks, Architect



TYPICAL CLASS ROOM, SCHOOL HOUSES OF
Wm. H. Weeks, Architect

HAZEL HAWKINS MEMORIAL HOSPITAL, HOLLISTER, CALIFORNIA
WILLIAM H. WEEKS,
ARCHITECT

PUBLIC LIBRARY BUILDING, MODESTO
WILLIAM H. WEEKS, ARCHITECT

MELROSE BRANCH LIBRARY, OAKLAND, CALIFORNIA
Wm. H. Weeks, Architect

MONTEREY PUBLIC LIBRARY, MONTEREY, CALIFORNIA
Wm. H. Weeks, Architect

SANITARIUM, SAN LUIS OBISPO, CALIFORNIA
Wm. H. Weeks, Architect

RESIDENCE OF MRS. ANNIE DOUGHERTY, SAN JOSE, CALIFORNIA
Wm. H. Weeks, Architect

CLIFF RESIDENCE, SANTA CRUZ, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

RESIDENCE OF DR. BLANCHARD, SAN JOSE, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

An Architect's Records—How He Keeps Track of His Business

By P. H. CLARKE, in System.

FROM the side pocket of his coat the architect drew a notebook. "I paid twenty-five cents for this a year and a half ago," was his comment. He pointed to a fairly large sheet of paper that occupied half of the space under the glass pad on his desk. "That," he said, "I drew up myself once when I had a spare half hour." He showed me a three-by-five card that lay on his desk and remarked: "My time card!"

"I am the most systematic person in the world," the architect continued. "And those are about all my records. I don't mean to say that there aren't one or two other books I keep, but these are my day-by-day guides, that tell me where I'm at, and help me make more money."

The little pocket notebook, I soon discovered, was not a record book in the accounting sense of the term. Nevertheless, it was a very necessary part of the architect's business paraphernalia. The rules of the American Institute of Architects do not permit members of the profession to advertise, or go after new business in most of the ways that are current among commercial organizations. Therefore, the successful architect is a man with a wide acquaintance among the classes of persons who are likely to become builders. He quickly learns to take note of projected buildings, in order to follow up the prospective owners, and secure for his own office the work of designing the building.

This is the purpose of the architect's pocket notebook. Whenever he gets wind from any source of a projected building, he makes a note of it. Sometimes he secures his information from news notes in the daily papers; more frequently he gets advance information from the people he associates with, and from regular commercial agency reports. If the prospect has in mind constructing a building of the class the architect is used to handling, he makes a personal call on the owner.

"Sometimes," says the architect, "I don't need to use my little book so strenuously as at other times. A growing reputation and a 'come-back' clientele are gradually making it possible for me to devote less time to getting business and more time to handling the work that is under way. I keep the book up from habit; and occasionally it brings me a job of the kind I particularly want, and might miss if I didn't have my notebook as a daily reminder."

The second record which the architect pointed out to me as one of his essential guides proved to be a schedule of jobs under way. The architect does much of the superintending of jobs himself, and this record keeps him familiar with just what is being done. As soon as he has secured an owner's word to go ahead and draw up plans for a building, he makes an entry on this schedule sheet. The sheet is illustrated on page 85. Across the top are a number of column headings, each designating one particular phase of construction work, or work in the architect's office. Together, these headings constitute a list of all the things which the architect must see completed according to specification before he can report the building satisfactory to the owner. Under each general heading of this sort are two smaller column headings, designated in each case, by the letters S and F. The letter S stands for "started"; and F, for "finished."

Running down the column at the extreme left side of the schedule is a series of numbers, with one number to each line. As a job is received, it

is given the next unoccupied line on this schedule, being known from that time forward through all operations in the office by the number it receives on the schedule. In the second column, which has for its general caption "detail," one or two words are written to identify the building at a glance for the architect.

"You see," he says, "I might not remember at once whether Number 3 was a school building for Roth, or the residence for Mallory. Ordinarily I do not have a large number of jobs on hand at once, but I make the notation for future reference. This happens to be the Roth building, so I have written in here 'Roth School.' I might get the same result by having a card index to identify my numbers. But don't you think this is the simpler way?"

The architect carries his visible index plan on into his drawing and document files, just as he also carries his numbering system over. We shall see a little later how these files work out. Just now the schedule sheet needs to be explained in further detail.

Consider the first column heading at the top: "Preliminary Sketches." On the Roth building—Number 3—the record shows that these were "started" on February 25th and "finished"—that is, they received the owner's O. K.—on March 12th. "Working Drawings"—the next column heading—were begun immediately: March 13th; and were finished by March 25th.

These entries indicate how the schedule is written up throughout. With this record, the architect has in front of him at all times an exact statement of progress on every building for which he is responsible. He puts in the "started" dates just as soon as the contractor begins the various portions of the work, and the "finished" dates as soon as there are completed to his satisfaction. Therefore, he can glance across his schedule sheet at any time and tell exactly the condition of every one of his buildings. He can check up progress, and knows at once where construction on some building is falling behind; where, on another, it is satisfactory; and where, on a third, it is beating the schedule.

"I play a game with myself," says the architect, "trying to get all the squares on my schedule filled in. As a matter of fact, when business is good, there are always a lot of new white squares coming along towards the bottom of the sheet."

In handling the rest of his office, the architect is equally systematic. He has a number of large, canvas-covered folders, about three by three-and-a-half feet in size, in which he keeps his sketches and drawings. These folders are filed in numerical order in small, vertical racks, and each folder is tagged with a number corresponding to the rack in which it is kept. The racks are constructed in a fireproof vault, the door of which is conveniently near the drawing tables. A simple index of the folders, of exactly the same kind as that written on the schedule sheet—so far as the information it gives is concerned—is pasted on a piece of cardboard. This hangs just inside the door of the vault. If the architect is in doubt as to which folder contains the drawings for the Roth building, he has only to glance down the list on the index and put his finger on Number 3; for the number on the folder is in every case the same as the number on the schedule.

All drawings connected with a job are filed in its folder. When the building is completed and there is little possibility that the drawings will be needed further, the folder is taken out of the "current" racks and put in a "transfer" rack. These racks are exactly similar in construction to those

where the "current" folders are filed, and they are indexed in the same way. They are simply less accessible than the others. Space is limited in this architect's office, and it is essential to keep the folders that are in actual, daily use, as free as possible from "dead" material.

The same condition applies in the filing of letters and documents. An ordinary four-drawer letter-size filing cabinet is used for this purpose. Each drawer is supplied with numbered division cards. The numbers correspond with the numbers on the schedule. All correspondence, contracts, specification sheets and similar papers that have to do with a given job are filed in folders behind the correct division card. Documents that have to do with the Roth School building, for example, are all filed back of division card Number 3.

A simple method of cross indexing has been adopted by the architect for cases where a letter takes up two or more distinct subjects.

"For example," the architect said, while he was explaining this part of his system, "here is a letter on my desk that takes up, first of all, some matters in connection with the Roth building. It also answers another letter of mine in regard to an entirely different building. In this case, the portion of the letter dealing with the Roth building seems more important than the other part, so I will file the letter in the correspondence folder under section Number 3; but in the folder under Number 17 I will put this note: 'See the letter from Bentham & Sons, 3-15-19, filed under Number 3.' That way, I never lose track of anything I may need later."

This document and letter file is indexed with a card that exactly duplicates the information given on the card which indexes the folders for drawings. And in the same way as in filing the drawings, the document folders for completed jobs are placed in the less accessible drawers of the cabinet. This leaves the folders that are in regular, day-by-day use, close at hand, ready for immediate reference.

The architect's time card is very simple. It merely lists the half hours in a working day, one above the other. When he is working on any job, he checks off on the card the approximate time he spends on it. For example, on Monday morning, he may work from 8:00 to 9:30 on preliminary sketches for a hospital. He writes the information on a card, checks his starting and finishing times, notes also on the card the office number which is assigned to the hospital job, signs his name and takes a fresh card when he starts a conference with Brown about a proposed moving picture theater. His draughtsmen keep the same kind of cards. At the end of the day all the cards are assembled and filed in trays behind guide cards bearing the different job numbers.

The architect pays himself a salary, which he figures on an hour basis. When a job is completed he figures his labor time cost from these cards and posts it as a lump sum to the page in the ledger in which the job is recorded. There is no waste effort in keeping this record, but it gives a certain check on the cost of each job, and shows whether or not he has made a satisfactory profit.

The pages of the ledger, mentioned above, are numbered and indexed in the same way as the files. The Roth building, for example, is detailed on page 3. Besides the ledger, the architect also keeps a small cash book, to record incoming and outgoing moneys; and a journal of non-cash transactions, from which he posts to his ledger. These records, altogether, require but a very small portion of his time—perhaps it is necessary to make an average of half a dozen entries per day.

The schedule is the dividing record in the business. It shows exactly how much work is ahead; and when too large a proportion of the squares

	DETAIL	PRELIMINARY SKETCHES		WORKING DRAWINGS		FULL SIZE DETAILS		SPECIFICATIONS		BIDS		EXCAVATION		FOUNDATION		SUPERSTRUCTURE	
		S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
1	Harkness Hall	7/16/14	7/20/14	8/2/14	8/10/14	8/9/14	8/20/14	9/2/14	9/8/14	10/1/14	10/20/14						
2	Green Bldg.	8/7/14	8/30/14	9/15/14	10/29/14	11/6/14	11/27/14	12/2/14	12/15/14								
3	Roth School	2/25/15	3/12/15	3/13/15	3/25/15	3/29/15											
4	Murphy, H. A.	2/26/15	3/28/15	3/1/15	3/9/15	3/7/15	3/11/15	3/13/15	3/19/15	3/19/15							
5	Stillson, K.	2/28/15	3/7/15	3/9/15	3/22/15												
6	Hardy Home	3/3/15															
7																	
8																	
9																	
10																	
11																	
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13																	
23																	
24																	
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27																	
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30																	

SCHEDULE SHEET ON WHICH THE ARCHITECT KEEPS TRACK OF JOBS AHEAD.
His Time Card and Record Book are Shown on His Desk in the Photograph

are filled in, it becomes evident that more work must be sought. It also shows when the amount of work ahead is becoming especially heavy.

A good feature of the numbering system which the architect uses is the way in which it can be extended to the numbering of drawings. Different drawings for the Roth building, for example, can be numbered according to any method desired, and will always be identified as belonging to the Roth building by having the figure 3 prefixed to the distinguishing number. Thus, a drawing bearing the number 3-117 might be a full size detail of the brick work in the Roth School building.

"My aim," says the architect, "is to know everything essential about my business, and yet not have any more records than I need. I believe, with these few records I keep, I could bring an outsider in here and have him perfectly familiar with the routine of my office in ten minutes."

Marine Safety

By F. W. FITZPATRICK.

WHAT an appalling lot of additions have lately been made to our list of marine disasters, by accident and by war! The recent wreck of the Hanalei near Point Bonita, Cal., resulting in the loss of many lives, has, like so many other catastrophies of a similar nature, resulted in the usual long drawn-out inquiry and owl-like finding that such or such an officer was to blame for a collision or malnavigation. In a round-about sort of way that officer may have been to blame, but the real culprit is, it seems to me, the system of construction of our ships. I can't for the life of me see it otherwise than a horrible crime to permit the sending of a thousand or more people to sea with nothing but a half inch of steel between them and eternity!

In our great ships of today, where hundreds of thousands of dollars are spent in decoration, in supplying endless luxuries of travel and more or less useless frills, the very first principle of naval construction seems sorely neglected. The veriest landlubber must recognize that that first principle is to build something that will **stay** afloat. These leviathans of the sea will of course float under certain circumstances, but the circumstances under which they will not float are so many and so apt to occur that we are forced to the conclusion that the naval architects are still a bit wobbly as to construction.

It took twenty-five years for the land architects to realize that wood would burn and that to build unburnable buildings they had to eschew wood and inflammable materials and those that though unburnable were damageable by fire. And so with our naval architects, it is taking them a long time and awful lessons, involving terrific loss in life and property, to learn that the first and most important function of a ship is to stay afloat however rammed or banged-up it may be. Speed, luxury, economy in construction, all those are secondary considerations.

Today ships have a double bottom in certain parts, water-tight compartments here and there—made so by doors that in an emergency may or may not work and that in any event depend upon human forethought for their closing—bulkheads fore or aft or amidship and all that sort of thing. If a vessel is compartmented fore and aft, she is liable to be rammed amidship, and down she goes and the public is surprised and horrified; if she is bulkheaded amidship, she'll some day poke her nose on the rocks in a fog and only a handful of her people can be taken off; or if she is amply protected in both particulars she probably will have but a paper-shell keel and rides up on an iceberg and rips herself open—witness the Titanic, and there you are, some one or more vulnerable parts forgotten or neglected. Talk about the "great crimes of the age," is this not one of the greatest?

It has long been hammered into our naval engineers—but to little avail—that all that they do in the way of elaborate, complicatedly closing water-tight compartments, bulkheads, vertical divisions, inner shells and what not, is quite necessary and highly commendable, but that **still more** is imperatively necessary. Air-spaces that are always closed; great, horizontal buoyant safeguards, added to what they are already doing, are what will finally insure protection to life.

Instead of the usual section of deck-beams used in ship-building, why not use a deep, light, I-beam of equal metal, then the customary deck plates on top and thin ceiling plates below? There you have a perfect air-space enclosed between every two beams and as wide as the deck. It might even

be wise to cut up these spaces with little cross divisions so as to make as many small units as possible. Break into one or two or more spaces, but there is all the rest of the buoyant deck floor space that will supply its share to the buoyancy of the whole. Rip off the prow or stove in the vessel's side or punch a hole in her keel and she may go down and down, submerging deck after deck, but she'll still stay afloat with perhaps but her top deck out of water, but that is sufficient area for the passengers to occupy in safety until taken off by other vessels.

Make your deck but fifteen or eighteen inches thick and figure up the air space that that will give you, the buoyancy insured by five, six or eight decks bound together by hull and vertical supports, all over and above and beyond the customary chambers and air-spaces that are susceptible of damage and you will be surprised at the vast increase in the amount of buoyancy you will have secured, and absolutely tight buoyance, not anything that has to be closed off in an emergency, but something that is always ready.

* * *

Delay in Awarding Contracts

DELAY in taking final action on a contract after the bids have been received oftentimes works a hardship on the low bidder. The contractor has bid on the undertaking in good faith and has deposited his certified check or other security as a guaranty that if successful he will execute a satisfactory contract and furnish bond for the performance of the work. He is thus in a measure tied down. If his outfit is not large enough to handle more than one piece of work he hesitates to bid on other undertakings because he does not know whether or not his equipment will be required for carrying out the first contract. This contractor is in about as aggravating a position as the fisherman whose tackle gets caught in an overhanging tree just when the fish are beginning to bite briskly. His companions are having rare sport, while he, red of face and with hands trembling with excitement, is striving to untangle his line from the branches. Delays of a month in awarding a contract or rejecting the bids are of frequent occurrence. There have been instances where bids have been held under advisement for six months or even longer before final action was taken. In many cases the delay is due to some unforeseen happening, such as a court action brought by a taxpayer. In other cases, however, there is no such excuse. Right of way difficulties, that could have been settled before the call for bids was issued, often hold up the awarding of a contract. The settlement of legal troubles after the bids have been taken instead of before the work is advertised, is another cause of delay. Some cities or public organizations are notably slow in awarding their contracts. They have so much red tape, so many checks and counter checks that the low bidder can take a good long vacation while waiting to find out whether his bid is accepted or rejected. On the other hand it is becoming quite common to specify in the official proposal or the form of contract that the work will be awarded or the bid rejected within a certain definite time. A contractor bidding under this condition knows just what to expect and can make his plans accordingly.—Engineering & Contg.

American Institute Canons of Ethics

THE following Canons are adopted by the American Institute of Architects as a general guide, yet the enumeration of particular duties should not be construed as a denial of the existence of others equally important although not specially mentioned. It should also be noted that the several sections indicate offenses of greatly varying degrees of gravity.

It is unprofessional for an architect—

1. To engage directly or indirectly in any of the building trades.
2. To guarantee an estimate or contract by bond or otherwise.
3. To accept any commission of substantial service from a contractor or from any interested party other than the owner.
4. To advertise.
5. To take part in any competition which has not received the approval of the Institute or to continue to act as professional adviser after it has been determined that the program cannot be so drawn as to receive such approval.
6. To attempt in any way, except as a duly authorized competitor, to secure work for which a competition is in progress.
7. To attempt to influence, either directly or indirectly, the award of a competition in which he is a competitor.
8. To accept the commission to do the work for which a competition has been instituted if he has acted in an advisory capacity, either in drawing the program or in making the award.
9. To injure falsely or maliciously, directly or indirectly, the professional reputation, prospects or business of a fellow architect.
10. To undertake a commission while the claim for compensation, or damages, or both, of an architect previously employed and whose employment has been terminated remains unsatisfied, until such claim had been referred to arbitration or issue has been joined at law, or unless the architect previously employed neglects to press his claim legally.
11. To attempt to supplant a fellow architect after definite steps have been taken toward his employment, e. g., by submitting sketches for a project for which another architect has been authorized to submit sketches.
12. To compete knowingly with a fellow architect for employment on the basis of professional charges.

* * *

A Menace to Honest Contractors

IN a recent issue of the Secretary's monthly letter, the Master Builders' Association of Boston calls attention, rather forcibly, to measures adopted by contractors to secure competitors' figures, and cites the following as an example:

A general contractor's office is called up on the telephone and the statement is made that an estimate had been given by the person talking, but that the latter's estimator had gone out of town carrying his estimate book with him. He then asks if the general contractor will kindly give the amount of the estimate to the party talking, so that the latter might furnish other general contractors with a bid.

Concerning this the letter states, "the damnable practices by which honest contractors are defrauded, apparently ignoring all matters save the low bid, and by skinning and stealing, have brought the building down to a mighty mean estate."

The letter then appeals to the owners. It asks them to readjust their conceptions of competition, and to make the factors of ability of performance of work, reputation for reliability, fairness and decency of treatment as the weight against low bidding. It says that owners should bear in mind that an unscrupulous general contractor can easily take out of the owner all and more of the difference between his low bid, and that of a contractor who can not persuade himself to do unworthy things. The statement is made that competition rests upon something more significant than the difference in price or time of execution. It asks that architects urge their clients to comprehend that ignoring this fact and the persistent awarding of contracts to merely the low bidder on a job inevitably leads

to the complete discouragement of those who wish to do work on the square.

It says, in conclusion, that unless a change in the attitude of owners is manifested soon the wholesomeness of the building business will be totally destroyed, and that the chief sufferers will be those who pay the bills.

* * *

Municipal Art Commission for St. Louis—San Francisco Next?

An ordinance creating a municipal art commission has been passed by the St. Louis City Council. The board will consist of nine members, as follows: President of the board of public service, ex-officio; commissioner of park and recreation, ex-officio; director of city art museum, ex-officio, and one architect, one painter, one sculptor, one landscape architect, and two other residents of the city, the six members last designated being appointed by the Mayor. Of the six members first appointed by the Mayor, two will be appointed to serve for one year, two for two years, and two for three years, and after the expiration of their respective terms of office, their successors will be appointed each for a term of three years. The commission will serve without compensation and will elect a president and a vice-president, whose terms of office will be for one year and until their successors are elected and qualified. It will be the duty of the commission to make recommendations to the board of aldermen and to the board of public service regarding the location, design and decoration of any public building, bridge, fountain, arch, lamp post, stained glass, tablet, statue, gateway, fence, monument or memorial of any kind of a permanent character and location, and no such public structure or monument shall be erected or installed in any public place, or removed, relocated or altered in any way until the plans therefor have been submitted to the commission and the recommendations of the commission, or a majority thereof, have been made to the proper authority. The lines, grades and plotting of public grades will be subject to like approval by the commission. Such recommendations must be made within a period of thirty days from submission, and failure to make recommendations within that period will make the decision of the commission unnecessary.

* * *

Competition for Municipal Lighting Tower

A RATHER unique competition is being conducted in San Jose for plans for the reconstruction of the Municipal lighting tower at Market and Santa Clara streets. The competition is open to any architect or engineer in the State, and the successful plan will be awarded a prize of $200. It is also the purpose of the committee to allow the person whose design is accepted a percentage of the total cost of the work for making detail drawings and supervising construction. The tower is constructed of steel and is 210 feet high. The foundations are 75 feet apart, covering the four corners of the cross streets, while the top of the tower is probably not over six or eight feet square. The recent high winds have weakened the structure, and it is proposed to strengthen it and provide a new scheme of lighting. It has been suggested that jewels be used, also that a flashlight or ball of lights might appear at the top. The award of the successful prize will depend upon the uniqueness and the attractiveness of the lighting effect. The plans must be submitted not later than June 20th. Mr. A. J. Hart, Market and Santa Clara streets, San Jose, is chairman of the Tower Committee and will furnish full information on application.

Woman as a Domestic Architect

From the Standpoint of a Britisher

By EDWIN GUNN, A. R. I. B. A.

ARCHITECTURE is a great and difficult art, the mere scope and meaning of which not one in a thousand appreciates, or, perhaps, one in a dozen professional architects, fully understands. The broader and truer meanings of the term as relating to dealings with the masses of buildings and their design to excite definite emotions in sensitive beholders are, however, now more readily grasped than they were, owing, perhaps, to the frequent bandying of such phrases as "grand manner" and "town planning," and it is commonly recognized by people sufficiently interested to care that ingenious contrivance of detail is not architecture, though forming a part of it in some of its minor applications. Ruskin rather unkindly said of Welby Pugin in one of his scathing denunciations of English architecture (which he did not understand): "Expect no cathedrals of him; but no one, at present, can design a better finial." Continental opinion seems to sum up the typical British architect on somewhat similar lines: "Expect no cities of him; but no one, at present, can design a better cottage." Even this modest qualification has latterly been questioned more than once in current journalism.

It has been freely stated that all is not well with our domestic architecture, and the claims of woman as the natural savior of the situation have been again and again advanced. I have not gathered that architecture had much to do with the claims put forward, though the writers concerned seem to have thought so. They attach, really, from another point of view. Briefly the argument is this—and I hope they will soon elaborate or develop their pleas, as continual restatement has somewhat staled their oft-reiterated cry: "Women alone should design houses, because they live in them and understand their working." Or, as Mr. Robertson Scott, well known as a writer under the pen-name of "Home Counties," puts it, even more directly, "Structures which are to be lived in most of the time by women, and are to be wholly worked by women, are planned by men, chiefly 'single men in barracks' of offices."

It will not do to push this line of argument too far, or we shall be committed to the principle that the criminal (or should it be the warder?) must always design his own cell. But, seriously, is there anything in this claim? Where does man live? The cheaper class of (alleged) humorous papers is perhaps responsible for an impression that his time is divided between his office and his club; but this can be dismissed as obviously untrue as regards the cottage-dwelling class. And does woman so devotedly attach herself to home? Is her existence divided between the kitchen passage and somewhere in the neighborhood of the linen-closet? Not to anything like the extent she would have us believe; often she is fluttering about the West End, corrupting her taste and making herself envious and discontented by worshipping the numerous ingeniously misshapen creations in which the fashion of the moment decrees that she should clothe herself. Enough of this; it is a side issue. The assumption, however, that woman, while preserving and cultivating all the domestic virtues, will yet find time to become a prolific designer of houses, is, to say the least of it, amusing. For, observe, it is not the mere fact of being a woman which fits her to design houses for people to live in, but the fact of being a domesticated woman, and as her architectural business increases so her

fitness to conduct it would automatically diminish—a state of things not unknown with male architects, by the way. But even conceding the claims made, and allowing that woman might make an efficient designer of the domestic machinery of the house (reserving the right to object that this is a very minor part of architecture), what is to prevent man from doing, or to prove that man has not done, the same thing as well as woman can hope to do? Instances to the contrary can no doubt be produced—kitchen ranges badly lighted, draining-boards for left-handed washers-up, no draw-off taps on upper floors, insufficiency of cupboards (I use the word with bated breath). But is anyone bold enough to declare that the intellect of man is incapable of satisfactorily grappling with such very simple problems of arrangement, or that male architects would have a monopoly of carelessness and stupidity? And, after all, is there not something nobler than a cupboard? I do not mean a wardrobe.

A sense of proportion is the one absolutely essential quality of the architect—not alone in the sense of geometrical ratio between masses and parts, and subjection of detail in subservience to the whole conception, but in the avoidance of any exaggeration of certain components to the sacrifice of others. For instance, it is desirable to have good drains; but the architect who designed his drain plan and fitted his house to it would not be committing architecture. An extreme instance, no doubt; but we are invited to let woman design our houses on somewhat similar lines around the domestic offices. Design in plan and section as practised by the abler of our domestic architects is something very much more than the mere fitting together of so much accommodation (including cupboards) to serve the needs of domestic convenience. But, again, is woman always so determined in securing convenience at all costs? The woman who "lives in the house" craving for cupboards denied by the unpractical male architect—it's quite a touching picture: but what of woman who lives in her dress craving for —not pockets, but a solitary pocket? Why? Fashion forbids!

We know something of the fashion in architecture—everything at present must be redolent of the days of good King George, to be followed by neo-Greek; but I see fearful visions of exaggerated fashions in architecture if woman once gets her head! We all know the mushroom, aeroplane, and other expansive forms of hat—practical, you will observe, in the perfect ease which is permitted their wearers when seated, say, in a railway carriage. Picture our domestic architecture if a fashion for roofs on a similar lavish scale but started, followed by a reversion to the toque or baby-boy style. No, I do not think that woman can maintain the claims to that sweet reasonableness and hard common-sense in dealing with the minor conveniences of life which have been put forward on her behalf by interested parties: one feels that she would always be prone to become, to an even greater extent than man, the mere slave to an idea, before which cupboards, sinks, water-supply, and possibly even roofs and windows would have to retire if they did not conform. Now, taking it as demonstrated that woman would be most likely to fall short of the high hopes entertained for her as a contriver of domestic convenience, what of her claims to success as an architect?

Unfortunately, the "lady architects" who from time to time prevail upon journalists short of copy to print their wearisome effusions on the eternal topic of "cupboards," do not seem anxious to publish their designs, so that I am acquainted with no feminine building to which the test of critical examination can be applied. There was indeed a cottage at one of the early cottage exhibitions, but we must, perforce, rely on other evidence. Woman

has been fortunate in receiving tacit admission to a sort of pretension to "better taste" than man. Goodness knows how it came about—lack of self-confidence on the part of man, I suppose, or, possibly, a feeling that anything so unreal and inessential as art was beneath his lordly notice. As far as I can gather it largely depends on woman's displayed preference for the more delicate (i. e., washy) shades of blue and pink in decoration, a fondness for draping, and a passion for nicknacks which converts the drawing-room—woman's sphere—into the most fussy and unsatisfactory room in the average house. William Morris, at least, knew better. "Here are two things," he said, "about which women knew absolutely nothing—dress and cookery; their twist isn't that way. They have no sense of color or grace in drapery, and they never invented a new dish or failed to half spoil an old one." I do not think that I need labor this point. I am not anxious to prove that the average woman is less likely to make a successful architect than the average man—who makes a precious poor one—but that there is no evidence to show that she would be likely to make a better one.

Upon the physical aspects of the case I have not touched. I do not regard woman's obvious difficulties with excavations and scaffolding as really material or insuperable. Sir Christopher Wren was hoisted to the giddy heights of St. Paul's in a basket, and I am sure that this method of transport would commend itself to woman, who, I am given to understand, is the chief supporter (both directly and by influence) of such delightful inventions as the wiggle-woggle, joy-wheel, and similar violent pleasures at our educative exhibitions.

* * *

Housing Commission Announces Awards

The housing commission of the city of Los Angeles has announced its awards of prizes in the competition recently concluded for the solution of a hypothetical problem in the design of low-priced workingmen's houses. The drawings invited were to conform to certain detailed specifications, and a majority of the competitors were criticized by the jury in not following the instructions closely.

The problem assumed two plots of ground, one a large area of $4500 per acre value, the other a small one with a value of $25 per lineal foot of street frontage. Each of these plots was to be laid out in the most advantageous manner and houses designed for them of the following values: $650 with monthly rental value of $10; $750 with $15 monthly rental value; and $900 with $20 monthly rental value.

The jury was composed of Architect J. E. Allison, representing the Southern California chapter of the American Institute of Architects; Architect G. E. Bergstrom and Cora Deal Lewis, representing the housing commission.

The awards were as follows:

First prize, $50.00, to Geo. H. Hodenpyl, 2216 Juliet street, Los Angeles.

Second prize, $25.00, to Winsor Soule, of Santa Barbara.

Third prize, $15.00, to Haas & Harker, 449 Bradbury Bldg., Los Angeles.

Fourth prize, $10.00, to Kenneth A. Gordon, 625 N. Mentor avenue, Pasadena.

Honorable mention—First, Peter A. Welch, Los Angeles; second, Mott M. Marston, Los Angeles; third, Warren D. Lampert, Manual Arts High School, Los Angeles.

FIG. 1. THE CATHEDRAL OF ST. PIERRE

Louvain: Mother City of Flanders

By HECTOR ALLIOT, Los Angeles, in Art and Archæology

"LOUVAIN is burning! Louvain is in ruins!"

The world of culture forgot for an instant that men were fighting and sacrificing life and the pursuit of happiness, to express its anguish for the loss of priceless treasures in the ravaged Belgian city. An impartial historian will later tell us why and how this modern destruction of one of the jewels of mediæval artistic expression happened. This is neither the time nor the place to consider it; we can record only archæology in the making.

From the inanimate works of their mystic originators, the spiritual essence ascends and permeates the minds of those even who are not scholars, and we gratefully discover that what was Belgium's glory has suddenly become mankind's own inheritance, for the destruction of that little known European city has touched the artisan's cottage as well as the university hall throughout the civilized world.

In every land where higher culture obtains, a deep and genuine feeling of sorrow is expressed for Louvain in ruins. This remarkable unanimity of opinion constitutes a new confirmation of the indefinable yet powerful bond of universal æsthetic brotherhood, and latent appreciation of archæology in all mankind.

Louvain was the mother city of Flanders. From its crowded and democratic beehive colonies took their flight to Brussels, increased Bruges, Ghent, Antwerp, and even went abroad creating in Holland and in England vast manufacturing interests hitherto unknown to those lands. The prolific energy of the freedom-loving Louvain burghers produced in the early

part of the fourteenth century a city of extraordinary wealth and power. Industrious and deeply religious, the weavers of Louvain gradually accumulated vast possessions in the quaint old city. Private and municipal funds were, as was usual in mediæval communities, employed for the purpose of beautifying their beloved metropolis with unique municipal edifices and marvelous houses of worship.

Curiously enough, the vast majority of European travelers passed rapidly through Belgium, often traversing by night its wide cultivated plains, well-kept roads, rivers and canals bordered with poplars and red-tiled farmhouses, which form a bucolic picture of most enticing charm. More curious and sapient visitors, artists and scholars harked back to the call of the colossal tower of Saint Rombold at Malines and leisurely entered the domain of Flemish mediævalism.

At Oudenaarde, Bruges, Ghent and Louvain, artists and imaginative tourists found again the "atmosphere" of five centuries ago, practically unchanged by time, undisturbed by the passing generations. What one has read in ancient Spanish and Flemish chronicles was there embodied before one's eyes; the costumes of the elder women, identical with those of their remote ancestors, completing the illusion of living backward three centuries or more. It is true that in the slow course of time the younger generations have adopted shoes instead of sabots, but whatever modernity has been introduced into Louvain was in the outer quarters only; the "vieille ville" remained as it was gradually evolved by the taste and endeavor of the Brabantians in the middle of the fifteenth century. Ancient Spanish dwellings, hotels, and palaces were found in many tortuous streets; marvelous doorways ornamented with intricate iron work, mixed with earlier and later Flemish architecture of typical quaintness.

Interest, however, attached itself to the Grande Place, the center, whence the chief streets radiated, recalling the Roman ground plan. It was here that one found the Cathedral of St. Pierre (fig. 1), and opposite the unique Hotel de Ville (fig. 2). Other Belgian cities, imitating Louvain, have built city halls of great beauty, and numberless towns have devoted extraordinary artistic taste, much time, and vast sums in erecting them, but Louvain's Hotel de Ville has long been regarded by architects as the most remarkable municipal edifice in Europe.

This jewel of architecture was undertaken by one Jehan Keldermans, who was succeeded by Mathiende Layens. The latter built it, and—according to documentary evidence accidently discovered in 1846—was its "Master Mason." Layens took up his task in 1445, died thirty years afterward, and was duly buried in the churchyard of St. Jacques. Nothing is known of this master-builder,—who was a master architect as well—even his tomb remains unknown, but the Hotel de Ville endures, the greatest monument an architect ever had to immortalize his genius. On no other municipal building of such vast proportions was ever so much work bestowed.

The childlike, imaginative genius of the mystic architect and sculptor of the middle ages has expressed in the Hotel de Ville of Louvain, possibly to a greater extent than anywhere else in Flanders, its inborn sense of proportion, balance, and exquisite workmanship. From the entrance to the Cathedral the building looked like a colossal reliquary, the masterpiece of a goldsmith, worthy of standing on some giant altar. For the artist and the scholar it was without peer as an exquisite expression of the Flemish Gothic in its full flowering.

Across the square stood St. Pierre (fig. 1), the great Cathedral, a handsome edifice, built on the ruins of a house of worship erected in the

FIG. 2. THE TOWN HALL OF LOUVAIN, OTHERWISE KNOWN AS THE HOTEL DE VILLE

beginning of the eleventh century. Simple in its original construction, it was amplified and elaborated—practically rebuilt—some years before the Hotel de Ville, about 1430. The usual agglomeration of houses, additions, and chimneys—stacks crowded upon and obscured the beauties of its Gothic outlines. The front view was, however, most impressive, as the central west window was of noble proportions, dignified and simple. The general effect was, however, much marred by the broken portal and tower, which were damaged by lightning more than three hundred years ago in a violent storm and had never since been repaired, giving to the general aspect of the noble pile a most depressing appearance.

While the Hotel de Ville was one of the most admirable examples of architecture in its exterior, its interior arrangement and decoration were commonplace; St. Pierre's was exactly the opposite.

The Cathedral's nave, transepts, high choir and ambulatory were exquisitely beautiful in proportion, an open lattice-work triforium crowning its triple clere-story. Singularly enough the walls were plainly white-washed and devoid of decoration. Yet in the contemplation of the artistic treasures contained in the five chapels, the blankness of the walls was forgotten.

In the chapel of San Carlos Borromeo was the famous Van de Baeren's triptych of the Beheading of Saint Dorothea, the Statue of San Carlo by Geefs and De Crayer's Altarpiece. Adjoining San Carlo was the Chapel of the Armourers, with its remarkable symbolic railing of arms and cannon, and a locally celebrated crucifix. The pulpit has been frequently illustrated as a fine example of eighteenth-century wood-carving, which is its chief raison d'être. While the graver's work is admirable enough, the selection of subjects and their treatment were most unhappy, particularly in a Cathedral devoted to Saint Peter. Beneath two monstrous palms, with the cock crowing, the Repentance of Saint Peter is depicted, while beyond is The Conversion of Saint Paul, with his horse overthrown, surrounded with elaborate, meaningless carvings but of exquisite workmanship.

Louvain, the center of Roman Catholic culture in Belgium, with its world-renowned library, its famous university, its matchless cathedral, its hundreds of mediæval houses is in ruins. The torch has made ashes of the greater part of the visible embodiment of five centuries of culture in the great city of Brabant. Yet, through an almost miraculous good fortune, the Hotel de Ville has escaped. Matchless in its beauty, the shrine of civic liberty of Louvain stands practically alone, symbolically dominating the desolation of the Grande Place.

Los Angeles.

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All Square

"How did you come out on the $3,000 house you contracted for?"

"Came out in pretty fair shape. The contractor spent my $3,000 and took the house for the difference."—Louisville Courier-Journal.

MUNICIPAL DETENTION HOME, SAN FRANCISCO
Louis Christian Mullgardt, Architect

Raising the Standard of Municipal Architecture

By LOUIS CHRISTIAN MULLGARDT,
Formerly President of the San Francisco Society of Architects.

[EDITOR'S NOTE.—*Following is Mr. Mullgardt's address delivered at the First Conference on City Planning, held at Del Monte, together with extracts from Mr. Percy V. Long's discussion.*]

MR. PRESIDENT and Gentlemen:—"Raising the Standard of Municipal Architecture," is a very broad subject, one that is very interesting to the profession, and of vital importance to every community. It is most intimately allied with the subject introduced by Mr. Dillman on City Planning.

The only logical way to get good results is by planning right, before any material work is done. In that particular we have too frequently erred. I say this because we have about us so much inferior work. Municipal architecture does not consist merely of public buildings built for city purposes, but of all public and private architecture. Our interest in architecture is equal, relative to all sorts of structures. Architecture is not like a watch for the owner to look at alone. All architecture is exposed to view of all people. If buildings are not acceptable to the sight, then we have

erred publicly. The same thing is true of the plan, the invisible lines—the ones not observed on the outer surface. It is not alone necessary that the exteriors be made acceptable, but that the plan be equally so and fundamentally so. Without a good plan, there can be no good exterior.

To obtain good results, it seems essential that a council be appointed. Select qualified men to appoint a qualified council.

It is neither wise nor fair to the public, fair to ourselves, that we should undertake to appoint men to design unless we are specially qualified to appoint.

The most difficult point is in the beginning to select or find those who are really qualified to give us the best results. Without obtaining the best results that can be had in every instance, we have failed of our purpose, we are wasting public funds, to the extent that the work is not of the best.

In architecture, as in engineering, and what not, there are many who are qualified. There are some few who are exceedingly qualified, but the majority are not qualified. This brings us back to the same subject that I touched upon a moment ago, the proof lies in the fact that the majority of our architecture, both municipal and private, is inferior architecture.

It is difficult but not impossible to prove to the lay mind that such is the case. Every man who is not an architect devotes his time to some other study. His interest in architecture is, nevertheless, keen. He derives knowledge and impressions of architecture in a superficial way through observing his surroundings. Unfortunately, that general observation school, is not one of good influence. Seventy-five per cent of our architecture is not good. We have, within this building, an exhibit of architectural subjects, a comparatively small collection, some of which is very creditable, some not. But that which is here has been selected out of a great many buildings which have been erected in various parts of this State. The committee making the selection found it absolutely necessary to reject about three-quarters of all the things that were submitted, and even at that the committee was generous in the choice made in some instances. The people who control things, who are in direct touch with this question of building up our cities properly, believe that the things which they advocate and of which they are proud, are things always to be proud of. It is a delusion under which they labor.

Our daily papers, especially toward the week end, Saturdays and Sundays, are usually filled with illustrations of proposed new structures. If you will be so good as to accept my word for it, the majority of things published are pitifully bad. It is such an influence that we labor under. Anything can find its way into the newspapers, and it is fair to assume that the influence derived from things published in that way, is very detrimental in an educational way, upon the public at large.

I consider that this conference could scarcely do better than arrange for a selection of the creditable work which is being done in the State of California. It might be well to go beyond our State to find good things, to present for observation at these conferences, and possibily at other times during the year. Such work should be manifolded, and permanent exhibits established at many points in the State, of things that have been passed upon by qualified men.

We have a common method of establishing open competition for public work. Such competitions seldom meet with good results as they are not sufficiently enticing to the better men in the profession. The cost to the architect is invariably a drawback. Such designs usually cost anywhere from $500 to several thousands to the architect, to say nothing about incidental expenses. It is in the nature of a gamble usually, the profession does

not know how the matter will be finally controlled. It is partially on that account that we frequently get inferior buildings. The cost of professional service is practically uniform in the end. If we do not pay for the service in the beginning it is charged up later on, and perhaps in a way that is neither apparent nor profitable to the owner. Worst of all the result is inferior. Inferior designs produce poor results for the public, for which it is taxed, and which it must bear with thereafter.

The importance of designing cities well and making all parts of the city as equally attractive as possible must be apparent.

It is essential that we pursue such methods and advocate such means that qualified men be given the task in every instance to plan and design,—it makes no difference where they come from, or who they may be, so long as they give us the very best solution of a problem.

Discussion

Mr. Long: Mr. Chairman, I want to supplement Mr. Mullgardt's remarks from a practical point of view. Mr. Mullgardt is a gentleman of very high standing in his profession, and naturally, I take it, feels that he is in rather a delicate position in attempting to point out the way these evils can be corrected. As a matter of fact, it all sums itself up in the proposition of getting expert advice. Those of us, and we all of us here who have had political experience know that in municipalities and in towns, when it is proposed to erect public buildings, there is an immediate attempt on the part of many of those in the architectural profession to bring pressure to bear in order to secure the selection of themselves or their friends as architects. We know that too frequently throughout this State, in fact, in a majority of instances, architects have been selected not on account of their standing in the architectural profession, but on account of their political influence, their ability to bring political influence to bear, and in some instances their willingness to divide their commissions. That has resulted in a very bad type of municipal architecture in this State. It has been improving in these last few years, and a better type of architecture has been seen. In San Francisco, we have secured some very splendid results, by the selection of three very high-minded men in the architectural profession, who have considered the problem to be treated, taken the area to be built upon, and its relation to the streets, and then have worked out, in a general way, the treatment of that particular problem. Then a scheme of competition has been put forth, architects invited to compete—take, for instance, in connection with the City Hall, I think there were some sixty plans presented and prizes were awarded. As Mr. Mullgardt pointed out, it means a great deal of expense for an architect to enter into a competition. Rarely do they get any return for their services, and in addition to that, there is a big expense in the employment of draughtsmen, and the employment of materials in order to simply present material to be passed upon. And it is not fair to ask architects to go to that expense and not compensate them for their outlay, and I think we had twenty first prizes there of either $1000 or $1500, which would pay the architects competing for the actual outlay on their part. When it came to passing upon the plans, leaders in architecture from all over the United States were invited to come to San Francisco, and we paid for their services. So that the plans, before they are accepted, receive the best expert judgment. That is what we want to derive from this conference, either this or subsequent conferences, a plan by which the State and the University could aid in this character of work, so that municipalities could get the benefit of the best expert advice in the selection of plans for municipal buildings.

In San Francisco, the engineers have worked with the architects, and the results of a few of the specimens were given to you on the screen last

night, showing how buildings, designed for purely engineering purposes, could be made very attractive, and at no increased cost. That has been our experience. We are putting in today a fire alarm station for San Francisco in Jefferson Square, at a cost of only $36,000, a concrete building, and to my mind it is going to be one of the finest buildings in the United States. It is simply treated, but treated by men who know their business and men who take a genuine pride in their profession and a genuine pride in educating the public. And it is big work, fully as big work as the municipalities are doing themselves. And they must be treated by experts. The engineer probably comes in closer touch, because his work is planning, planning for the future, and the engineer of today, when he plans a bridge, works for the architect. And it is one of San Francisco's plans to develop the Hetch Hetchy Valley so that, when that 300 foot dam is to be started, that we are to work with the landscape architect, so as to place the dam, in relation to its surroundings, in the most attractive manner, without disturbing the natural scenery, not having simply a plain, concrete structure, but having it so arranged as I have seen pictures and photographs of dams in foreign countries, with boulders jutting out from the base of the dam, so it will be a very beautiful cascade, and so arranged that vines can be planted and the plainness of the concrete work can be concealed. But it takes the experts, it takes the men who have studied in their professions, and studied from very high motives, to do that sort of work. That is one of the things we want to do here in California, and one of the things we want to educate the public to the value of—that we do not simply want to put up a building with four walls which will be subdivided into a series of rooms for actual public purposes, but to make it pleasing to the eye, and not cause the property owners in any section of the city near a city hall or police station or fire house to feel it an eyesore, but to place it where it can render most efficient service and at the same time make it most pleasing to the eye. That is what Mr. Mullgardt has been telling you in a most guarded way, because he appreciates the fact, as we do, that there is jealousy and bickering among architects as there is among the members of other professions—almost as much as there is among the doctors, and that is saying a great deal. (Applause.)

Mr. Cheney: Before our time is up on this subject that Mr. Mullgardt has brought up, which, to many of us, is one of the most important things in California today, I think we ought to carry out that suggestion that he made, and I move you now, Mr. Chairman, that the chair be empowered to confer with Mr. Mullgardt, the League of California Municipalities, and the University of California, upon the appointment of a committee, that committee or commission to try to bring to the attention of the League of California Municipalities and other people in the State, as Mr. Mullgardt has outlined, what the best municipal architecture is, and see, so far as possible, that the bad municipal architecture does not get the attention of small cities or large cities or anybody that would be likely to duplicate it. That was the idea that Mr. Mullgardt had in mind, I think. I move that the chair, if necessary, appoint a committee to report at the next session tomorrow, or on Thursday, upon this very important matter.

Mr. Long: I second the motion.

Prof. Howerth: You have heard the motion that the chair be authorized to appoint a committee which shall be requested to confer with the persons named, with the object of determining, I suppose, the best method of securing the result pointed out by the last speaker on the programme.

The question was put and carried unanimously.*

* Such a committee is now being formed.—Ed.

Sand Foundations for High Buildings

SAND, being almost incompressible under ordinary conditions, can sustain very heavy loads with slight or negligible compression. When it directly overlays rock or other thick hard stratum and is securely confined or otherwise protected against possibility of lateral displacement it forms a satisfactory foundation and will carry heavy loads with safety as long as these conditions are maintained, says the Engineering Record.

It transmits pressure laterally so that a heavy vertical load may produce considerable horizontal thrust and to resist it the sand must be confined horizontally by natural or artificial means. At considerable depths below the surface the weight of the superincumbent material affords resistance to transverse or upward pressure and is equivalent to lateral confinement for ordinary pressures. This resistance, of course, ceases whenever an excavation is made below and adjacent to the point of application of vertical pressure.

The presence of water makes a great difference in the character of the sand so that the drainage of wet sand or the saturation of dry sand under pressure is an important matter, while flowing water passing through sand, especially if fine, is very likely to carry the grains with it or produce a considerable movement.

Careful consideration must therefore be given to these factors when it is proposed to build heavy structures on sand foundations. If any changes in the amount of water in the sand are possible adequate safeguards to maintain the conditions must be adopted.

Many heavy buildings of moderate height, including some of the earlier steel cage skyscrapers, have foundations on sand, usually only a few feet below the surface, and these foundations in many instances have proved entirely reliable. Almost all of them are at or above ground water level. Formerly they were made with timber and masonry footings, then of concrete and now almost entirely of reinforced concrete or of steel beams enclosed in concrete.

Some buildings have a monolithic foundation slab covering the entire area. While theoretically this distributes the load uniformly and produces the smallest unit pressure, it is generally very difficult and expensive to avoid excessive stresses in the distribution, and some such footings, especially those of concrete without adequate reinforcemeent, have become badly cracked and broken and have permitted serious settlement. It is therefore the general practice now to support the columns singly or in small groups on isolated separate footings proportioned to reduce the loads to substantially the same unit pressure on all.

The Spreckels building, San Francisco, fifteen stories high, was built about fifteen years ago with all of its columns seated on a double grillage of continuous I-beams reaching entirely across the lot in both directions and embedded in a mass of concrete more than 4½ feet thick resting on wet sand 25 feet below the surface of the street. This has proved satisfactory, enduring severe earthquake shocks which it was expected to resist.

The columns of the St. Paul building, a twenty-six-story structure in New York, have steel beam and girder grillage with concrete footings on the wet sand about thirty feet below the street. The sand was loaded to 8,000 pounds per square foot and in several years has settled only a fraction of an inch and with such regularity that it has been unnecessary to adopt the special provisions designed for compensating irregular or excessive settlement.

In the new Municipal building, New York, part of the foundations are carried to solid rock and part supported on wet sand.

The Admission of Architects to Practice

IT is wholly natural that, on the question of the laws which are being proposed in several states covering the admission of architects to practice, public opinion should misconstrue the purpose it is desired to accomplish. Any attempt at the regulation of an existing evil is only too likely to be looked upon with doubt of the sincerity and unselfishness of those who propose the regulation.

We take it for granted that no architect, worthy of the name, desires to see a law passed which will have the effect of compelling people to employ an architect. But we also take it for granted that every competent architect does desire that the man who appropriates the title shall be made responsible, in some manner, whereby his incompetency shall not inure to the profession in which he has no right to practice.

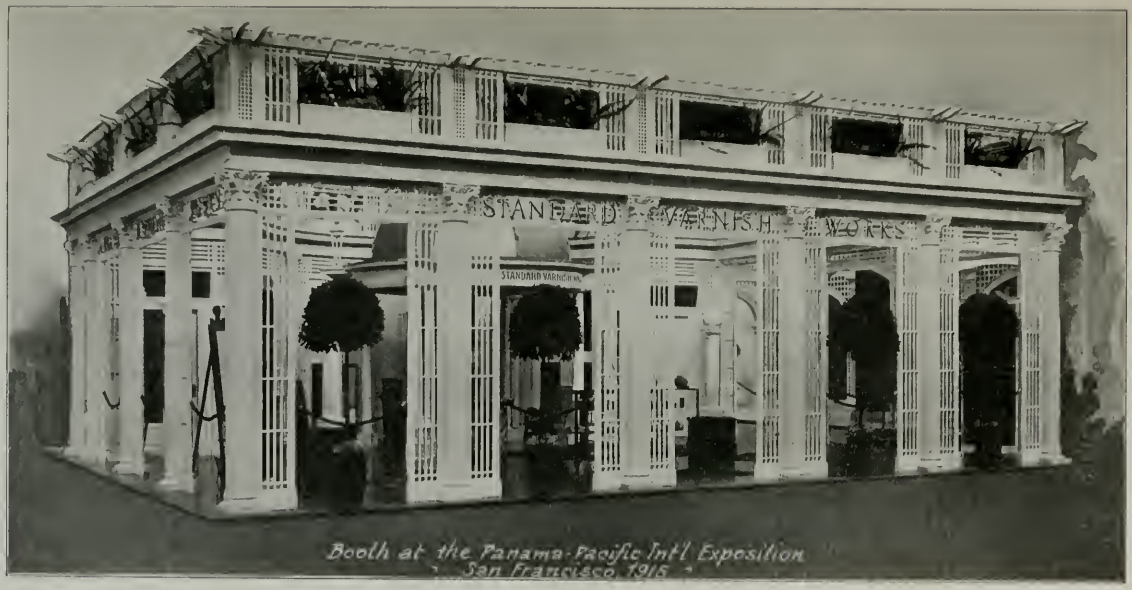
We do not understand that any of the laws bearing upon this matter, either in force or in process of legislation, are intended to accomplish more than to insist that an inexperienced and incompetent man shall not hide behind the title of architect. The public is left free in its choice of the man who shall design its buildings. No restrictions whatever are interposed between them and the maker of plans. The law only applies to the use of the title, and stipulates that if a man proposes to use it, he shall first demonstrate his qualifications by some other means than that of an experiment upon the public safety.

The profession of architecture has suffered, and still suffers, from incompetency. What else is to be expected when the title of architect may be adopted by whoever chooses so to do? Any law which will tend to diminish incompetency in measure will be quite as much of a benefit to the public as to the profession. Architecture must stand upon the performance of those who practice it; but, it is manifestly both unfair and stupid to permit the profession as a whole to be judged by the performance of those who never pretend to conform to the most elementary requirements and who use the title of "architect" as a matter of business expediency. Such freedom merely constitutes an abuse which injures everybody.—Institute Journal.

* * *

Concrete Bench Marks

Concrete bench marks are set on Oregon State concrete road work near the edge of the right-of-way at different places along the highway where conditions or materials change. For example, where the wearing surface changes from a 1:2 mix to a 1:1:2 mix, a bench mark is set and the elevation stamped upon it. On the pavement, at points 10 ft. each side of the expansion joints, a soft copper wire is set 6 in. from the elge of the pavement. Measuring from this wire exact elevations, read to thousandths, are taken every foot across the pavement. The object of the wire is to locate definitely a point which can be found at any future time for reference with respect both to longitudinal and transverse measurements. In years to some it will be possible and easy to check the amount of wear on the pavement to within a thousandth of an inch. Having the two measuring points so close together and under the same working and traffic conditions, but with different materials will, it is figured, make it possible to determine the merits of the materials, mixes and cements used. Exact records of every contraction crack are kept. The shape, dimensions and notable features are all drawn to scale.—Engineering Record.



A NOTABLE EXPOSITION BOOTH

There is so much to see at the Exposition that it takes something out of the ordinary to really fasten one's attention, and this the Standard Varnish Works has provided in its booth in the Mines Building, a picture of which is shown on this page. It is finished throughout in white "Satinette," the flower boxes overhead, together with the bay trees, adding a bit of color and giving dignity and class to one of the handsomest booths at the Exposition. The interior contains many beautiful panels from all parts of the world, finished with enamel and Elastica, giving one a fine idea how these would look in a home.

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Through an unfortunate error in making up the forms, the wrong caption was inserted beneath the Frontispiece in the April Architect and Engineer. The caption read, "Santa Fe Railway Station, San Diego, California, Bakewell & Brown, Architects." It should have read, "The California Building, Panama-California Exposition, San Diego, Cram, Goodhue & Ferguson, Architects."

THE WRONG CAPTION

The architectural profession throughout the country has displayed more than passing interest in the recent competition for a Neighborhood Center conducted by the City Club of Chicago, and which was won by Schenck & Mead, a firm of women architects with offices in New York City. Their plans were selected out of twenty-three submitted. One Pacific Coast competitor, Dean Geo. A. Damon of Throop College of Technology, Pasadena, received favorable mention, as noted in the April number of the Architect and Engineer.

THE NEIGHBORHOOD CENTER IDEA

The object of the competition was to bring before the public in tangible form the possibilities of enhancing neighborhood life in our cities by better grouped buildings and grounds for neighborhood activities. Under the terms of the competition, competitors were permitted to select any section in any city which seemed to them adapted to their purpose. Miss Schenck and Miss Mead chose for their suggested development that portion of the Borough of the Bronx between Washington Bridge and McComb's Dam Park, New York.

These young women have also very recently prepared plans for a block of model houses in Washington, D. C., to be known as the Ellen Wilson Memorial Homes. The bill making the creation of the model home for the poor of Washington possible became a law during the

last illness of President Wilson's wife, who was deeply interested in the project.

The Neighborhood Center idea is developing rapidly all over this country, as a solution of the difficulties created by resident congestion in all large cities. The concentration of population in certain localities, caused by the incessant growth of population, has resulted in depriving our people of many social privileges, which are quite as important to them as is the accumulation of wealth by business enterprise, the seeking of which has become almost the only pursuit in city life. The residents of large cities are practically deprived of everything except the privilege of living in crowded rooms, and are forced to depend almost entirely upon their own restricted powers of furnishing it for anything like reasonable social entertainment for themselves. There is left none of the old-time neighborhood spirit which formerly made our homes real refuges from the cares and worries of business life, and a welcome retreat from the burdens of industrial enterprises.

There is a real demand, therefore, for the Neighborhood Center, and it is encouraging to note that leading architects of the country indorse it and are lending their aid in every way possible.

FITZPATRICK FOR SUPERVISING ARCHITECT

The Supervising Architect of the Treasury Department, Washington, has resigned and the vacancy will shortly be filled by Mr. McAdoo, Secretary of the Department. Strange to say, we have not heard that any Pacific Coast architect is a candidate for the office, which is one of considerable honor and fairly good pay. There are a number of Coast architects we could mention as entirely capable of taking this job, also a few fellows in the East. Of the latter Mr. F. W. Fitzpatrick seems best qualified and most deserving of recognition, and if we are not mistaken "Fitz" is a good Democrat, which ought to help along his candidacy very materially.

Pacific Coast friends of Mr. Fitzpatrick, though long a resident of Washington, D. C. (practicing as consultant architect), call attention to the fact that he is really a Western man and a citizen of whom the West is most proud. He has done much for it and, indeed, much for the whole country. A most public spirited citizen, he has given liberally of his time and means to matters of purely public benefit.

Mr. Fitzpatrick received his training as an architect East and abroad and for thirty years has been intimately connected with the real progress and development of architecture in this country. He is acknowledged to be one of the foremost designers in the land and as a constructor has no superior. Incidentally he is also recognized as the highest authority in the world on fireproof construction and actually started the Fire Prevention Movement in this country.

He has departmental experience, having been appointed under Cleveland in charge of the technical work on the big Chicago Postoffice building. Political and other machinations, under a succeeding administration got that building into disrepute and there was some looting and there would have been a tremendous lot more of it, had not Mr. Fitzpatrick literally forced executive action that clarified the situation and permitted him to complete the building at less cost than that of any other big government building on record!

If any one in the country can produce artistic, economically built and serviceable buildings and get the Supervising Architect's office rehabilitated and turning out speedy work that will disarm the criticism that the Treasury is three and four years behind with its buildings, Fitzpatrick is the man who can do it. A man fully and healthily alive, a technical expert, a keen executive, diplomatic in the extreme, a fine fellow

(Concluded at bottom of Col. 2, Page 106.)

With the Architects and Engineers

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morally and physically and perhaps above all else one who does things well, we can safely say that we voice the sentiments of many communities in enthusiastically suggesting Mr. Fitzpatrick for the place.

San Francisco Society of Architects

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Alterations to Federal Buildings

Architect W. A. Newman, Postoffice building, San Francisco, is preparing plans for alterations to the San Francisco Custom House.

Plans are also being made for alterations and additions to the Sacramento Postoffice building, the work to cost about $3500.

Plans are also under way for some alterations to the Appraisers' building, San Francisco. This work will start about July 1st, the beginning of the government fiscal year.

Consulting Architects Resign

Notice of the resignation of the Consulting Board of Architecture of the City of San Francisco, consisting of John Galen Howard, Frederick H. Meyer and John Reid, Jr., was filed with Mayor Rolph on April 21st. The board will retire at the end of the fiscal year but will continue to advise the city until the completion of the work in the Civic Center, according to the agreement made with the Mayor.

The work of the board has been most creditable. Under its supervision San Francisco has rebuilt practically all its municipal buildings—structures that compare favorably with those of any city in the United States.

Masonic Temple for Gilroy

A Masonic Temple is to be erected at Gilroy by the Masons of that city. It will be a two-story structure, probably of reinforced concrete. Preliminary plans have been made by several different architects, including Wm. Binder, of San Jose.

Architect Harris Allen Busy

Architect Harris Allen of Oakland has taken bids for a three-story frame and stucco fraternity house to be erected in Berkeley for the Phi Kappa Psi. The building will cost $15,000. Mr. Allen has also prepared plans for a three-story frame apartment house for Mrs. Alice Rickard. It will be erected in Bancroft, near College avenue, Berkeley. The cost is estimated at $30,000.

Bank Building for Los Angeles

Architects Parkinson & Bergstrom, 1035 Security building, Los Angeles, have prepared plans for a new structure to be erected on the property adjoining the Security building, Los Angeles. It will be occupied by the Security National Bank now located at Fourth and Broadway, and will be of Class "A" construction, faced with granite. The site is 60 x 158 feet.

Parochial School Planned

St. Joseph's Catholic Parish, San Jose, will build a large open-air parochial school at the western end of San Fernando street, San Jose, and plans are being prepared by Architect Chas. McKenzie of San Jose. In the same locality a frame and plaster church is being erected for St. Leo's parish, from plans by the same architect.

Grass Valley Carnegie Library

A Carnegie library to cost from $15,000 to $20,000 will be built at Grass Valley from plans by Architect Wm. Mooser of San Francisco. The building will be Class C and in the classic style of architecture.

Los Angeles Architects' April Meeting

The April meeting of the Southern California Chapter of the American Institute of Architects was held at the Hollenbeck Cafe, President A. C. Martin presiding. The attendance was not large on account of a meeting of the State Board of Architecture at San Francisco at which the Los Angeles members were in attendance.

The board of directors reported that Mr. John P. Krempel had been nominated by ballot of the Chapter for the degree of Fellowship in the Institute and that his name had been forwarded as the choice of the Chapter for this honor to the Institute for ratification at the coming convention. The directors also reported that Louis J. Gill of San Diego had been elected a member of the Chapter.

Architect A. M. Edelman, who has been in poor health for some time, was present.

A communication was received from the Architectural League of the Pacific Coast announcing that the next convention would be held at San Francisco on June 7, 8 and 9.

Messrs. A. F. Rosenheim and Octavius Morgan were appointed a committee to draw up suitable resolutions on the death of Mr. W. S. Eames, a prominent architect of St. Louis and an honorary member of the Southern California Chapter. Mr. Eames and Mr. Rosenheim were formerly associated in the practice of architecture in St. Louis.

Liked the Editorials

To the Editor: Your two editorials in the April number were the best that I have had the pleasure of reading in some time. It really is unfortunate that the Exposition authorities could not see their way clear to provide a place in the Fine Arts Palace for a fitting exhibition of California architecture. The directors of the Fine Arts department evidently overlooked the fact that all of the fine arts consist of two distinct elements; the first is that of invention, which is the theoretical side and must precede the second, namely, the scientific or practical side, constituting the execution. A good architect's design is frequently far superior to the ultimate execution of the actual structure, due to many reasons which are not directly attributable to the architect, insomuch that his task is so stupendous as to require the assistance of many other hands whose sympathies are usually lacking. The sculptor, painter and poet, on the other hand, are privileged to execute their own theories to the final conclusion. It is apparent that preliminary designing in architecture is the most vital step and that its influence should be regarded of greater importance than is customarily true.

With reference to your editorial on "The Architect and the Artist," too much importance cannot be attached to your argument for better architectural design. Superior designing is all too frequently lacking, whereas the science and knowledge of construction is a relatively common commodity. It seldom happens that a structure is inadequately built. But ninety-nine per cent of buildings fulfill structural requirements, whereas nominally twenty per cent fulfill requirings constituting good architectural design. Our towns and cities rely entirely upon architectural design for their rating in the eyes of the world. —Fellow, American Institute of Architects.

Oakland Club Building

The Board of Directors of the Oakland Commercial Club and Chamber of Commerce, consolidated, has voted to proceed with the work of financing the proposed 7-story club building to be erected at Thirteenth and Harrison streets, Oakland, at an estimated cost of $180,000. Instructions have been given Architect C. W. Dickey of Oakland to complete the working drawings and let contracts as soon as possible.

The Architecture of the P. P. I. E. Buildings

The Sacramento County Auxiliary of the Woman's Board of the Panama-Pacific Exposition recently enjoyed hearing Mrs. Juliet C. James of Berkeley deliver a course of eight lectures on the architectural and artistic side of the Exposition. Mrs. James has been giving these lectures throughout the State. Her talks are accompanied by colored slides beautifully illustrating the buildings.

Former Coast Architect Opens Offices in Minneapolis

Pacific Coast friends of William K. Macomber will be pleased to learn of his advancement in the profession of architecture. Mr. Macomber is now associated with F. W. Kinney under the firm name of Kinney & Macomber, architects, with offices in the Plymouth building, Minneapolis. Since leaving the coast Mr. Macomber has traveled in Europe. Mr. Macomber's former partner, Mr. W. D. Van Siclen, retains the Edmonton office.

Richmond School

Bids have been opened at Richmond for the construction of an addition of four rooms and an auditorium to the Fairmont school, from plans by Architect J. C. Narbett of Richmond. Construction will be frame and stucco.

Architect Narbett has also let a contract for the construction of an addition to the Lime Quarry District school, two miles from Concord.

DEPARTMENT STORE BUILDING, ATASCADERO, CALIFORNIA
Bliss & Faville, Architects

A Model City

Architects Bliss & Faville, Balboa building, San Francisco, report satisfactory progress in the preparation of plans and carrying on of construction work for the Colony Holding Corporation's Model City at Atascadero, San Luis Obispo county, California.

A contract has just been signed by the F. O. Engstrom Company of Los Angeles, amounting to approximately $200,000, for the construction of Administration and Press buildings, the former to be four stories and basement, with reinforced concrete walls, floors and roof, and exterior of pressed brick and terra cotta. A feature will be a large clay tile dome. The Press building will be of reinforced concrete with tile roof and will be two stories high.

Plans are now being completed for the construction of a huge department store building, 385 x 112 feet, the main section to be four stories in height and the wings to be three stories. Construction will be reinforced concrete, brick and terra cotta and clay tile roof. There will be fifty-one large plate glass show windows. The entire building will be equipped with automatic fire sprinklers.

Plans are also being prepared for a three and four story hotel of reinforced concrete and brick, to contain 150 rooms, many of which will have private baths. First-class plumbing will be used throughout.

Plans are also under way for a power station to be one story in height and to be of reinforced concrete. Also plans are being made for an opera house of steel, concrete and brick, and which will seat 800 persons. Several hundred cottages and bungalows are in course of construction or contemplated.

No Yosemite Hotel This Year

From all indications the proposed new hotel structure for Yosemite Valley will not become a reality this year. The Los Angeles promoters have evidently decided the time inopportune for such a venture. The result has been greater endeavor on the part of the camp owners of Yosemite to arrange to take care of the large number of reservations that have already been made.

Another Club Building for Oakland

The Oakland Club, composed of prominent Oakland society women, has purchased the lot on Montecito avenue, adjoining St. Paul's Church in Oakland, and will erect a handsome club building on the site. Mrs. G. W. Harrison is President of the Club and Mrs. Frederick E. Adams is Financial Secretary.

Grauman to Build Another Theater

D. J. Grauman, San Francisco theatrical promoter, has sold the Imperial Theater, and states that he will manage the new theater to be constructed on the southwest corner of Eddy and Mason streets, for which plans have been prepared by Architects Woollett & Woollett. The project is now financed. Preliminary figures were taken last fall, but on account of insufficient funds the project was held up.

French Hospital for Los Angeles

Architect W. S. Garrett, 406 Currier building, Los Angeles, is preparing plans for a new hospital building to be erected at College and Castelar streets for the French Hospital Association. It will contain about eighteen single rooms, two wards of four beds each, operating rooms, bath rooms, shower baths, locker rooms, etc. The construction will be of reinforced concrete and the estimated cost is about $40,000.

Architects Injured

John Bakewell, Jr., and John Baur, both well known San Francisco architects, were run down recently by a jitney bus, and quite badly bruised, Mr. Baur having several ribs broken.

The Bay State Man Here

Mr. C. J. Hunt, a member of the family of Wadsworth, Howland & Company, well known manufacturers of Bay State Brick and Cement Coating and other paint products familiar to Pacific Coast architects, is making his annual visit to the company's coast agencies. Mr. Hunt is one of the best known paint salesmen in the United States, he having been identified with the business off and on for thirty-three years. This is his tenth consecutive trip to California for the Wadsworth, Howland people. Mr. Hunt reports business good and says the increased consumption of Bay State Brick and Cement Coating in California last year was greater than in any other section of the country.

Work on Swimming Tank Delayed

Construction of the new swimming pool in conjunction with the new gymnasium, at Stanford University, is being delayed by a controversy between Vanderlyn Stow, treasurer and business manager of the University and the committee of students. The dispute is over the location of the pool. Committeemen have declared themselves as favoring the west side of the gymnasium, where there is more shelter and sunshine, while Stow favors the opposite side.

Apartments and Garage

Architect W. G. Hind of San Francisco reports a noticeable improvement in business. He has made plans for an apartment house for Dr. Redmond Payne and he has plans under way for a concrete commercial garage to be built in the Nob Hill section.

Studying Exposition Architecture

An interesting class recently has been started under the auspices of the San Francisco Young Women's Christian Association. Young women will accompany Miss Mary Stuart through the Exposition grounds, studying with her the art and architecture of the Exposition at 4 o'clock on Saturday afternoons.

$100,000 Residence

Architect Frederick L. Roehrig of Los Angeles has been commissioned to prepare plans for a large residence to be built in Oak Knoll for E. J. Marshall, vice-president of Torrance, Marshall & Company. About $100,000 will be expended on the buildings and improvements.

Suburban Depot

Architect Olin S. Grove, 2911 Telegraph avenue, Berkeley, is preparing plans for a small suburban railroad station to be erected on the Peninsula Electric Line, at Cupertino, near San Jose.

New Schools for Alameda

The people of Alameda have voted bonds amounting to $300,000 for new school buildings and sites. J. A. Shamly, president of the Alameda Board of Education, has given out the following information in regard to the new buildings:

The architects to be selected will be residents of Alameda if possible. Among the San Francisco architects residing in Alameda are Cunningham & Politeo, Henry H. Meyers, B. J. S. Cahill, Chas. E. J. Rogers, O. G. Traphagen.

Buildings to be constructed will be as follows:

One complete Class "C" building to cost $110,000.

One eight-room addition to the Washington school to cost $50,000.

First unit (to include eight rooms and an auditorium) of a group of buildings for the Lincoln school to cost $50,000.

As soon as the legality of the bond election is determined by the City Attorney, the matter of the selection of architects will be decided.

Steel Suspension Bridge Being Figured

San Francisco contractors are figuring a 750-foot steel suspension bridge to be built over the Eel river at Scotia, Humboldt county, from plans by County Surveyor A. J. Logan, of Eureka. There will be about 350 tons of steel. The structure will have concrete foundations, and will cost in the neighborhood of $50,000. The bridge will be a part of the State Highway in Humboldt county.

Los Angeles Millionaire Plans String of Skyscrapers

It is stated that Huelett C. Merritt, who is at the present time constructing a $500,000 bank and office building in Los Angeles, from plans by Architects Reid Bros., of San Francisco, intends to duplicate the Los Angeles building in San Francisco, and possibly in Portland and Seattle. Mr. Merritt has chosen a distinct type of architecture with classic lines and pure white marble front. His idea is to have a building of similar construction in every large city on the Coast, and each will be so much alike that the visitor will at once recognize it as the Merritt building. The structure to be erected in San Francisco will be Class "A," either eight or nine stories high, with marble front, and will cost $500,000 or more.

Bank Addition

Architect A. A. Cantin of San Francisco has completed plans and let contracts for the construction of a two-story addition to the Bank of Martinez. The ground floor provides additional rooms for the bank, while the second floor will be arranged into apartments.

League Convention Next Month

Arrangements are practically completed for the convention of the Architectural League of the Pacific Coast to be held in the San Francisco Auditorium June 7th, 8th and 9th. Architects from all the large cities and towns on the Coast are expected to attend and a number of Eastern visitors are also looked for. Charles Peter Weeks will preside with August G. Headman, secretary. The opening day will be taken up largely with transacting the business of the League and this convention will determine whether or not the League shall continue to exist. A plan for financing the organization must be settled upon if the League is to go on.

On the second day it is hoped to have an address by Willis Polk on "Segregated Contracts," while the General Contract Plan will be discussed by Architect James W. Reid.

It is possible that B. J. S. Cahill will read a paper on "The Architecture of San Francisco," contrasting the style predominating before the fire with the present-day type.

The last day of the convention will be devoted largely to sightseeing. A visit to the Exposition has been arranged and there will be a dance at the California Building under the auspices of the San Francisco Architectural Club.

Want Polk for Mayor

(San Francisco Chronicle.)

Will Willis Polk run for Mayor?

It may not have occurred to all the voters to ask, but that doesn't prove anything.

On the floor of the Builders' Exchange the Polk boom was launched the other day with a zip.

"Polk is the logical candidate," said J. W. Miller. "He would have built the opera-house if he hadn't been stopped, and he built the Hobart building, although they tried to stop him; and that proves that he's the logical candidate."

But to a committee that waited on him the architect is reported to have given the advice that the only logical candidate is the man who has no opinions and isn't afraid to say he has none on all subjects of public interest. Polk entertained a suspicion that this might rule him out at the start, but he thought a large field would add to the merriment in the coming fall.

Willis Polk to Design Costly Residence

Architect Willis Polk, of San Francisco, will design the half-million dollar city mansion which Mr. Daniel C. Jackling, the millionaire mining man, will build on the northeast corner of Washington and Octavia streets, San Francisco. Mrs. Jackling has made the statement that Mr. Polk would be the architect, but that no details for the new house had been decided upon as yet, other than that it would be one of the finest, from an architectural standpoint, in San Francisco.

Los Angeles Library "Competition"

The Los Angeles library board has published an invitation to architects to submit in competition preliminary plans and elevation for a 1-story and basement building for the East Los Angeles branch library, to cost approximately $30,000. While the form of the advertisement is most extraordinary, particularly from the standpoint of the code of the American Institute of Architects, Librarian Perry states that it is the board's desire to have "competition from the best architects," and it was not contemplated that the decision should rest upon the question of the lowest fee presented. The form of the advertisement he states is due largely to legal requirements. It is safe to say the competition has not received the indorsement of the Southern California Chapter, A. I. A.

Another Building for Sharon Estate

Architect George W. Kelham, San Francisco, has been commissioned to prepare plans for another large building to be built on property of the Sharon Estate in the down-town business section of San Francisco. Secretary Newlands has declined to give out any definite information, and Mr. Kelham was likewise non-committal. On excellent authority, however, it was learned that a store and office building of eight or ten stories is planned, the structure to be Class "A," with steel frame, fireproof floors, brick and terra cotta exterior, and metal trim throughout.

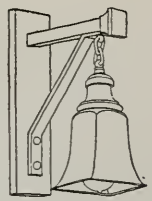
Repeal of Law of 1872

The bill repealing the law of 1872 which requires school trustees to advertise for plans for buildings has been passed by both the house and senate, and has been signed by the governor. The bill is, very brief, and simply repeals the existing law, leaving school trustees free to select an architect without competition if they desire. As there is no emergency clause in the bill, it will not go into effect until 90 days after the legislature adjourns, in accordance with a constitutional amendment recently adopted.

April Meeting, S. F. Society of Architects

The regular monthly meeting of the San Francisco Society of Architects was held at Bergez-Franks, 421 Bush street, at 12:30 on Wednesday, April 14th.

Mr. Mark Daniels, General Superintendent of National Parks, was a guest, and after the business of the meeting was transacted spoke briefly about the administration of the national parks, their needs and the difficulties of supplying them.



Heating and Lighting

Plumbing and Electrical Work

Edited By CHARLES W. FORTUNE

Recognition of the Profession of Heating and Ventilating Engineering

By CHAS. W. FORTUNE.

THE fundamental principles upon which the science, if it may be so called, of heating and ventilating is based, are the laws of physics, known as thermodynamics, the branch of the theory that treats of the relations between heat and mechanical work.

Exceptions might be taken to calling it a science, but in its rational design and modes of application, the engineer may work with a reasonable degree of exactness. Practically all the points of interest in the subject may be theoretically developed. As in all other branches of engineering, some parts require modifying, which brings into action the judgment and personal experience of the designer.

Empirical data, found by tests, are not only good things to apply as checks, but are a necessity, owing to the lack of information in any part of the subject.

Fortunately such cases are exceptional, for with the proper applications of the principles of thermodynamics, there is scarcely any part of the subject that can not be rationally solved. The profession has advanced greatly in the past few years, and at this day there are no reasons why those who design and install this class of engineering, should overlook all laws and feel satisfied in installing work that is empirical in all parts, and shows no signs of theoretical investigation.

A few portions of this branch of engineering, gone into more in detail, will emphasize in an explicit manner why the heating and ventilating engineer should be recognized. Under the head of Letting Contracts, we find there are four ways usually employed. First: Some person, conveniently called a dealer contractor, or manufacturing agent, draws up a layout, in the form of a plan and a brief specification, and guarantees to make a satisfactory installation for a stated amount of money, procures the apparatus from his special manufacturer, installs it according to his own ideas, and from data received from his principals, and in a general way guarantees it to give good results. Second: A manufacturing firm draws the plans, specifications, and contracts to install for a stated sum of money their own made goods, guaranteeing its successful operation. This system is perhaps a little more preferable than the first mentioned system. Third: A responsible engineer is retained, who makes plans and specifications for the work, and upon competitive bids, a contractor installs the apparatus, in compliance with the plans and specifications, the engineer being the judge of the material and work.

This system is fast becoming popular and eliminates the chance of the owner being *held up* by any particular manufacturer. The fourth system is one that, as yet, is not generally used, especially in public work. In this system a responsible engineer designs the system, and assumes all responsibility as to its erection or installation, and looks for a predetermined output or result. All materials are purchased in the open market, installed to his own satisfaction by men of their several trades, and under the engineer's own personal supervision. After completion, final tests, and acceptance, the client pays the bills, and takes over the completed plant.

This last method is more employed for large power or manufacturing plants, and not heating and ventilating plants, unless the plant is of such proportions as to be subsidiary to a power plant. The first and second methods are more employed for small installations, and the third method for larger and more important ones.

Furnace Heating.—No apparatus used for heating purposes has been more abused and had more adverse criticism heaped upon it, than has the hot air furnace. This has been true for many years back, but in the few recent years the prejudice has been greatly overcome, because the furnace has been given more engineering attention. The fault has not been in the furnace, but in the inadequate application.

Competition among furnace manufacturers has been so keen, that there has

been placed upon the market all kinds, good, bad, and even worse. In order to meet competition the makers have had to cheapen the manufacture by eliminating all possible unnecessary features, and to so rate them that the results could be only obtained under the best conditions of installations, such as would be found only in test conditions and not under the average working conditions.

In addition to what has already been said in regard the furnace, it is true that the manufacturer has been *so busy cheapening construction and making sales,* that he has been willing to sell to any *one,* regardless of the purchaser's knowledge to make an *installation,* and has not had, or cared to take the time to investigate whether any of the installers' engineering ability would bring credit upon his product or to his firm. This apparent indifference of the maker seems to have for the final results, is a source of great trouble, and one that *blackens* the public mind, and decides the buyer against furnace heating.

It is fast becoming a fact that properly installed furnace work is being done, and a great deal of credit for this is due to the Federal Furnace Leagne, who have done more than any other body of men to put the hot-air furnace near the level it should be. Furnace heating, when properly installed, is healthful, cheap and scientific.

Neither can all the faults be laid to the manufacturer. The purchaser is greatly to blame in view of the fact that he is willing to let the contract to any *one* who will produce the lowest price, regardless of his ability, or of the apparatus he represents. It is a very deplorable condition, but nevertheless true, that there are men in the business for *revenue only,* and care little as to results.

If such men were held strictly to their contracts, making it necessary for a satisfactory fulfillment, there would be less careless bidding and much of the trouble would cease. There is no better way to educate a contractor than to make him remove defective and improper material, especially after it has been placed, and install what was first required and specified.

Another feature of phase of the heating business, which often caused annoyance and error, is the relation of the heating engineer, or contractor making the installation, to the architect.

Building plans, especially residence work, are often, and one may with a large degree of safety say, *usually* made without consideration of heating. The heating plans, then, have to be made to suit the building. The different viewpoint between the designer of the building and the designer of the heating system causes much discomfort to the latter and to the detriment of his work.

In justice to both the system of heating should be one of the first selections, and the allowance could be made in the building plans for its installation. This would cause the architect no trouble, as any change that might be necessary could be made without affecting the general design. Some of the particular points that would need consideration, would be the location of the chimney, the location of the walls to accommodate the furnace and fuel space, height of basement ceiling, a most important factor, so that pipes could have the proper pitch, the location of partitions above the basement to allow easy run for risers to the upper floors.

All heating engineers know that the range of furnace location is limited, and after the plans are completed, to have to set the furnace out of its proper range generally spoils the efficiency of the system and brings undue comment on the designer. Furnace heating, properly installed, can be an ideal system, when care has been taken as to location of furnace, size and location of pipes and registers, fresh air supply to the furnace, and a system of humidifying the air.

This point is an essential one and should be given great care and consideration, as the *dryness* of air has always been one great drawback to furnace heating, but can be readily overcome when given the proper engineering attention.

Steam and Hot Water Heating.—Not as many failures occur in steam and hot water heating, for the reason that they came to be used after the furnace, and more experience had been gained by the contractors and are planned with greater care, and by men better qualified to do the work. Of all the difficult experiences found in these two systems, the greater part are in hot water installation. This may be readily understood when one considers the small motive force actuating the circulation, which is so easily retarded by small pipes, short turns, or improper laying. *Rule of thumb* modes of figuring and proportioning mains and radiators are too often used, even by those whose experience should teach them better. Residence heating by either steam of hot water is very well standardized, and if designed from fundamental laws, good results should be obtained. The architect is again often responsible for the location of the chimney, heater or boiler. Other points mentioned are directly chargeable to the man who designs the system, and there should be little excuse for his mistakes. He should know that the surface of mains and branches should be counted as heating surface, and that the efficiency of heaters or boilers is somewhat reduced after being in service, and that selection should be made having at least 25 per cent greater capacity than the total radiating surface.

Aeroscope an Engineering Wonder—A Word about Its Electrical Equipment

By PAUL C. BUTTE.

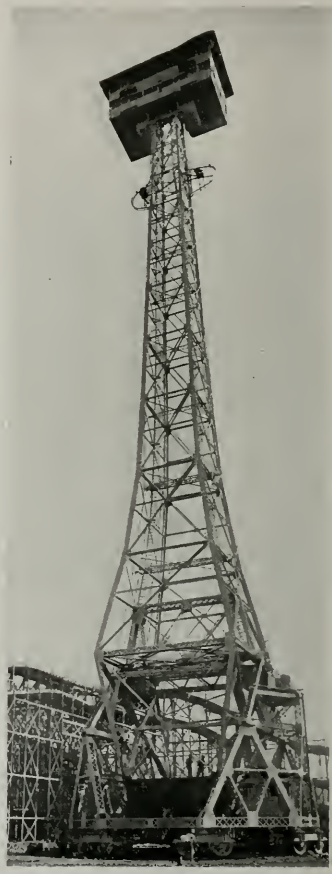
READERS of the Architect and Engineer of California no doubt know what it means to design an entirely new and original piece of apparatus; they will understand the great chance of failure where experiment is not permissible and where there is no precedent to work from as a guide. They will, undoubtedly, appreciate the considerable care and study required to avoid failure and also the boldness in this undertaking where thousands of dollars are involved, as was the case of the aeroscope, an amusement concession at the Panama-Pacific International Exposition.

Mr. Joseph Strauss, a well-known bridge engineer, created the idea and designed the entire structure in his offices in Chicago. The steel work and machinery were fabricated and built in Waukesha, Wisconsin; the electrical apparatus was built in Pittsburgh and San Francisco; the substructure was erected by a San Francisco contractor, the steel work by a Seattle contractor and the concrete work and passenger houses by different San Francisco contractors. And when the parts were put together, each and every piece fitted to a nicety, the entire machine went into true alignment, and on the first day of operation over 5200 passengers were successfully carried.

The principle of operation of the aeroscope is that of a balanced beam 252 feet long from end to end, pivoted near one end. The short end of the beam contains a large block of concrete, which counterbalances a house at the opposite end for carrying pasengers. The steel tower containing the trunnions in which the beam pivots, is revolved about a circular track. In other words, two motions are produced, one revolving about a vertical axis, the other revolving about a horizontal axis. These motions are controlled separately in either direction. It is obvious, therefore, that when both of these motions are worked simultaneously, a spiral motion is imparted at the end of the beam.

Considerable thought was given toward a practical plan to keep the beam balanced, as a slight unbalancing at the long end of the arm would necessarily mean considerable power for operation. This was accomplished by fastening two steel tanks containing water on the bottom of the passenger house. When the passengers board the house the arm would move downward within a limit distance of two inches, engaging a lever which would automatically open a valve allowing just enough water to flow out of the tanks to make up for the difference in weight. In case the arm became too light it would raise to close a contact controlling a 3 H. P. motor direct connected to a centrifugal pump, and the water would be pumped back into the tanks again. The scheme worked out very successfully and the balance obtained was surprisingly accurate.

Inasmuch as it was very essential to avoid accidents of any kind, limit devices were placed at a number of points. The general principle followed was to



AEROSCOPE RAISED TO FULL HEIGHT

AEROSCOPE LOWERED FOR TAKING ON PASSENGERS

rely primarily on the operator to perform all functions manually; but in case he failed to attend to his duties properly the apparatus would automatically operate to stop the aeroscope.

The following limit devices were provided:

1—At the completely lowered position,
2—At the safe swinging position above houses,
3—At the completely raised position,
4—At the safe lowering position above houses.

In addition to these automatic devices, the following lamp indicators were provided:

1—Completely lowered position,
2—Nearly lowered position,
3—Position to lower arm,
4—Safe swinging position,
5—Nearly raised position,
6—Completely raised position.

As a check on the above indicators, a mechanical indicator was also provided. Each of the four doors in the passenger house is provided with a contact arranged so that it will be impossible for the operator to start up unless all doors are closed. This is accomplished by connecting the coil circuits of the main line contactors through the door contacts before reaching the master controllers. To further prevent accidents a telephone system is installed between the operator and the conductor in the passenger house and communication is carried on before a start is made.

The power wires are carried through a set of collector rings and are extended to the operator's house located inside the tower structure. The electrical equipment consists of the following motors:

Four 20 H. P. 3-phase slip ring induction motors for revolving the tower.

Two 11 H. P 3-phase slip ring induction motors for raising the arm.

Two 5 H. P. squirrel cage motors for operating fans near one end of arm for decorative effect.

One 3 H. P. squirrel cage motor for balancing pump.

Each of the six larger motors is provided with a magnetic brake and in addition thereto emergency foot brakes are provided.

In order to evenly distribute their torsion the four 20 H. P. tower motors and the two 11 H. P. motors are started and stopped simultaneously in two groups. This is accomplished by using starters of the contactor type, controlled by a single master for each group of motors. It makes a more positive and reliable scheme than using the drum type of controllers grouped together mechanically, which was the original plan. The entire electrical equipment was furnished and installed by the Butte Engineering and Electric Company of this city.

The accompanying photographs give an idea of the massiveness of construction. The entire structure is exceptionally rigid and every possible precaution was taken to prevent failure of any of the parts. It contains over 325 tons of steel and about 400 tons of concrete. The capacity is 125 passengers, and making one trip going up and down in ten minutes. The passengers are raised to a height of 260 feet above the street. This height is equal to that of a 22-story building and the ride at this elevation is most thrilling.

The Heating and Ventilating of Small School Buildings

(Contributed.)

IN no department of school architecture has more progress been made in recent years than in the heating and ventilating of the smaller school buildings having from one to five or six rooms. Such schools are not large enough to warrant the great expense of installing basement plants with fans for ventilation. Furthermore, the cost of operating such plants makes them impractical, especially in a mild climate.

Nevertheless, the need for evenly heated and thoroughly ventilated school rooms is as urgent in the small buildings as in those buildings where the number of rooms is large enough to justify the expense of installing and operating a more elaborate heating and ventilating system; as school authorities are now agreed that good ventilation is as essential to a school building as the respiratory system is to an animal.

The solution of this problem of properly heating and ventilating the smaller school buildings seems to have been found in the use of gravity room heating and ventilating plants. These consist of specially constructed heaters or furnaces equipped with radiation proof casings and foul air ventilators. These plants are placed in an out-of-the-way corner of the room so that the seating capacity of the room is not interfered with.

With these plants standing in out-of-the-way corners of the school rooms, the heat is distributed evenly to all parts of the room, the floors are kept warm, and an abundant supply of fresh air is brought in from outdoors, heated to the proper temperature and distributed to the different parts of the room without creating drafts, at the same time a corresponding volume of the cold and foul air is drawn off from near the floor and removed through the smoke flue.

This system of heating and ventilating the smaller school buildings is peculiarly adapted to a mild climate, and is exceedingly economical. No special construction of the building is necessary, except that a single smoke flue 12 x 12 inches inside measurement should be provided for each school room. This flue serves both for smoke and foul air.

HIGH SCHOOL BUILDING, HONEY GROVE, TEXAS
This building has seventeen rooms and is equipped throughout with the Smith System of gravity room heating and ventilation.

The heating and ventilating plant usually stands in a corner of the room near the chimney, and wherever it is possible to arrange it, the smoke flue should be placed in the same end of the room as the entrance, as this makes it possible to have the heating plant located near the door.

Church for Fresno

The First Church of Christ, Scientist, of Fresno, has purchased a lot on the northwest corner of M and Calaveras streets, and will erect a $60,000 church. No architect has been selected as yet. Henry Dungelfinger, of Fresno, is chairman of the building committee.

INTERIOR VIEW, AUDITORIUM, HONEY GROVE, TEXAS, HIGH SCHOOL
Heated and ventilated by a single Smith Sanitary Room Furnace.

The Proper Height for a Kitchen Sink

Ever since the kitchen has been provided with a sink, this implement of torture has been located at a certain height from the floor, which guaranteed a back ache to anyone who had anything to do there. Meanwhile, housekeepers have been complaining and some have really suggested that the sink might be raised so that they would not have to stoop when obliged to use said utensil. But, like the Constitution, the height of sinks changes not, and only a revolution among cooks and wives will budge them. Everybody, the architect, the manufacturer and housekeeper, and even some husbands, admits that this is a badly needed improvement, but nobody starts anything. Why? Because the interested parties, the women in a body, do not demand the change.—Engineering Contractor.

The Engineering Contractor is wrong. Housewives started something more than a year ago over in the University town of Berkeley. As a result they can now have their sinks any height they want them if they will express their preference to the architect or contractor. Two feet ten inches used to be the average height of the kitchen sink, but the women folk have succeeded in getting a three foot and sometimes a three foot three inch sink put in "upon special request."

It has proved such a success that many architects now make the average sink three feet or three feet and six inches instead of two feet six or eight inches.

In New Offices

The New York offices and show rooms of the Dahlstrom Metallic Door Company are now located on the fifth floor of the Consolidated Gas Company's building, 130 East Fifteenth street, New York City.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.
(Required by the Act of Congress, August 24, 1912.)

The Architect and Engineer of California; published Monthly at San Francisco, Calif.

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Subscribed and sworn to before me this 25th day of March, 1915.

NETTIE HAMILTON.

SEAL

Notary public in and for the City and County of San Francisco, State of California.

(My commission exnires March 24, 1917.)

State, County and Municipal Engineering

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"Going Broke" in Road Contracting

MR. WILLIAM R. RAY, State Highway Commissioner of Washington, states in his last annual report that many contractors recently have "gone broke" in road work in that state. Unfortunately the State of Washington is not an exception in that respect.

The primary reason for such financial failures of contractors is ignorance of road building costs. The item of grading is almost invariably underestimated by those who have previously done little or no roadwork. Yet, if contractors were more given to reading there would be fewer mistakes on this score. Fourteen years ago the publication of Gillette's "Economics of Road Construction" made clear the fact that road grading normally costs much more per cubic yard than railway grading. Not only the smaller yardage per mile, but the large amount of trimming subgrades, ditches and slopes result in higher unit costs for roads than for railroads. Hence the railroad contractor is in grave danger of underestimating road grading unless he reads and studies the literature of the subject.

The first cost of a modern road making plant and outfit is high in relation to the total amount of work done with it each season. A $50,000 contract that must be completed in one road-building season will normally require an investment of fully $15,000 in plant and equipment. If motor trucks or traction engines and trailers are used, the plant investment will exceed this amount. A very expensive quarrying and crushing plant adds still more to the investment. The relatively short road-building season in many states, coupled with the large investment in plant, should serve to make a contractor "count the cost" with great care. Yet it often seems to the experienced road contractor that each year breeds a new crop of fools who count the cost not at all.

Publicity as to costs and as to the failure of extremely low bidders may ultimately eliminate most of the "fool bids," but the process is slow at best.

We note that Mr. Ray favors letting road contracts for a lump sum rather than by unit prices. This, he reasons, has the effect of eliminating unbalanced bids and of making bidders more careful. Of fifty-one lump sum contracts 90 per cent were completed at a cost to Washington state that was less than the engineer's original estimate. But of fifty-two unit price contracts only half were completed below the engineer's estimate.

We think that too much significance should not be attached to these results. They may simply mean that twice as many contractors "went broke" under unit price contracts. That is usually the case. Lump sum bidding is the most risky sort of contracting. The risks are enough at best. We do not favor making them worse by asking contractors to do all the guessing as to the percentages of rock, hardpan, and the like. Except under unusual or obviously simple conditions, we should not advise a contractor to bid on a lump sum basis unless he were to estimate very liberally for contingencies.

Of course it is possible to get contractors to bid on a lump sum basis, but

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in the long run, it will be found an expensive plan. It will either drive conservative and careful bidders away, or it will result in higher costs than under unit price bidding.

There are but two ways in which a state can save money by securing lump sum bids: (1) Through getting contractors to assume risks without fully compensating them for the risks. (2) Through preventing skilled contractors from outguessing the engineers as to the ultimate quantities of each class of work.

As we view it, no government should desire to make money at the expense of an individual. Where there are risks, a government should assume them as far as possible. If, therefore, there is uncertainty as to the percentage of rock excavation, the state should not attempt to make a contractor assume the risk.

An unbalanced bid can not ordinarily cause a loss to a state save under one condition, namely a wide difference between the estimated and the actual quantities, which wide difference the contractor foresaw but the engineers did not foresee. In other words, if a contractor can outguess the engineer as to the ultimate quantities, or if the engineer has actually erred in his quantity estimates, the door is open for successful unbalancing of bids. What competent engineer is ordinarily fearful of such a situation?

The common objection to unbalanced bids is entirely different. It is said that an unbalanced bid enables a contractor to put high prices on the work he does first, and thus it becomes possible for him to make an undue profit in the early part of the week. An unscrupulous contractor might thus "skim the cream" and leave his bondsmen to finish the job. If this is a justifiable fear, there is a remedy at hand. Let the contract state explicitly what unit prices will be used by the engineer in estimating the monthly payments to be made to the contractor, only the final payment being estimated at the contractor's unit prices.

The highest ethics is the best economics in the long run. Certainly it is no more than fair that risks be assumed, as far as

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possible, by the contracting party that is best able to stand a loss in the event of an unforeseen outcome. In the long run, the assumption of risks by a state or municipality will reduce the prices it pays for work done. If engineer's estimates are exceeded when this is the policy, so much the worse for the estimates.—Contract Record.

Concrete Floors in Dwelling Houses

A Letter from Homer Laughlin, Jr., in Concrete Cement Age.

TO give you accurately my experience in living in a house with concrete floors, it will perhaps be well to go back a little way and relate my experiences which led to the adoption of a concrete floor for a residence.

The Homer Laughlin building, Los Angeles, which I own, was built in 1898 and was the fifth building in the United States and the first building west of Chicago to use concrete floors. These were concrete floors placed on a steel skeleton. At the time the building was opened I had grave doubts of its success because every prospective tenant brought up the subject of the floors. Either they themselves were affected by rheumatism or they had some one in their office who had rheumatism and they were quite sure that living in an office with concrete floors would be detrimental to their health. The common remark was that they could feel the chill of the concrete go through them the moment their shoes touched the floor. Although the prejudice was gradually overcome it was at least five years, when concrete floors in office buildings had become more general, before the attention of the public was attracted to other features and away from the concrete floors, and I may safely say that it has been at least three years since I have heard a single person mention the subject.

When I was about to erect my home and decide on the subject of floors, my father, who had been a strong advocate of concrete floors in office buildings, advised me against their use in a residence. Careful inquiry developed that he himself was not opposed to the floors but was satisfied that my friends and others would interpose all the objections to their use in a residence that we had formerly gone through in our office building, and so I decided to put wooden floors downstairs for the benefit of my friends and concrete floors upstairs for the use of my family; but finally we worked up one excuse after another for leaving the wood floors out of certain downstairs rooms and finally they were left out altogether.

My floors are of a warm brown tone and come up on the side walls about 6 inches and flush with the plaster to form what would otherwise be a baseboard. Downstairs they are decorated with a palette-knife and look somewhat like carved leather. After the "carving" had been done an artist worked various colors of the rainbow into the decoration and then they were all varnished and waxed so that keeping them in order is similar to the polishing of wood floors but the polishing is required much less frequently.

Upstairs we use velvet carpets of double width and plain colors, sewed together to form a mat or rug, but without a border, and extending within 6 inches or 8 inches of the side walls all the way around. We find that no nailing strips or other means of fastening are necessary, since the carpet lies perfectly flat and is sufficiently large so that it will not move about.

Downstairs we use Oriental rugs entirely and a curious feature in this respect is that moths will not hatch on the under side of a rug in contact with concrete, where they do hatch when it is in contact with wood. This applies to the under side of the rug only, because it is not impossible for them to hatch within the rug fabric itself.

Now, the common impression is that a concrete floor will make the room cold, but this impression is reached by people who have gone into rooms with concrete floors where there was no carpet on the

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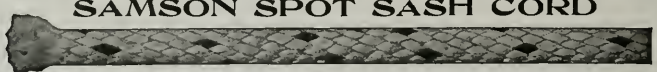

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floor and because at the moment, they were critical of concrete, but if one will go into a bare room where hard wood floors have been used they will get exactly the same effect. The addition of carpets and tapestries decreases the number of square feet where the air of the rooms comes in contact directly with the floor or side walls.

There is also an impression that concrete floors are damp. They are damp for the first two months after being laid and on this account should not be varnished or waxed, but after this period they are as dry as wooden floors. I have made accurate tests with hygrometers, to determine this point.

The concrete floor is to me most satisfactory because it is free from cracks in which dust accumulates and ascends every time the floor is flexed by stepping on it. There is never a squeak or other noise produced by the rubbing of one board of the interior floor on another. With carpets on the floors they are absolutely noiseless, and one cannot detect a person walking on an upper floor when he is in the room below, provided, of course, that there is a carpet on the floor above.

The concrete floor makes a much handsomer setting and background for Oriental rugs than wooden floors and one can do away with the unsightly baseboard, which always collects dust. Then there is none of the trouble of warping and straining which comes with the use of wooden floors.

Above all else the house is fireproof when properly built in other respects and one can leave home with the assurance that neither property of any considerable value nor lives will be destroyed in the event of fire. I feel that my pictures, rugs and porcelains are as safe in my house as in a vault at the bank, barring the possibility of theft, which is rather remote.

Architect Miller Busy

Architect J. R. Miller has prepared plans for the completion of the five-story Class C hotel at Eddy and Mason streets, originally promoted by the Downtown Realty Company, now the property of the J. K. Prior Estate Company. The interior of this building has never been finished, owing to financial reasons. The completion of the structure will involve an outlay of over $50,000. The same architect also has plans for the rehabilitation of the old Chutes theater and the construction of a handsome entrance to same from Fillmore street.

Architectural Exhibit

The exhibition of the San Francisco Architectural Club and Architectural League of the Pacific Coast will be held on the second floor of D. N. & E. Walter's furnishing store, June 7th, 8th and 9th.

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Industrial and other Information

of Interest to the

Architectural and Engineering Professions

Infringement on Pump Is Claimed

A suit has been filed in a United States court by S. F. Bowser & Co., Inc., against the Wayne Oil Tank and Pump Company, both of Fort Wayne, Ind., for alleged infringement of certain patents on their curb pump, familiarly known to motorists as the "Bowser Red Sentry."

This will be news to thousands of autoists, and the court's decision will be eagerly watched for by public and private garage owners throughout the country as well as by other manufacturers of curb gasoline filling stations.

"The users of all curb pumps, other than Bowser's, covered by these patents, render themselves liable to suits for infringement in addition to suits brought against infringing manufacturers," says S. F. Bowser, president of S. F. Bowser, Inc.

Otis Elevator Company's Latest Product

The Otis Elevator Company has recently published a book of interest to architects, manufacturers and business men and a copy will be mailed free on application to either the New York, San Francisco or Los Angeles offices of the company. The volume is entitled "Otis Gravity Spiral Conveyors," and the contents of the book is largely a description of a conveyor system that is intended to increase the efficiency of inter-floor movement of merchandise and at the same time lessen the cost of handling the stock.

Some Big Steel Contracts

Several nice steel contracts lately have been awarded. The Palm Iron Works of Sacramento has been awarded a contract for furnishing and erecting all the structural steel for the Capital City National Bank building, to be erected in Sacramento from plans by Architect R. A. Herold. The Judson Iron Works of San Francisco and Oakland will fabricate and erect the steel for the new Rainier brewery in San Francisco, while the 2000 or more tons of steel for the new San Francisco public library to be erected in the Civic Center will be furnished by the Pacific Rolling Mills. These jobs make a record in point of tonnage not equaled since right after the fire of 1906.

Did Work On Five of Mr. Weeks' Buildings

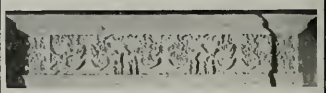
Frank Davison, successor to the Acme Company, plumbing, heating and sheet metal work, contracted for the Woodland school and Eureka high school, both buildings designed by W. H. Weeks and illustrated in this issue. Davison was also successful in landing the plumbing and sheet metal contracts for the Yolo Savings Bank building, the Santa Clara Savings Bank and the Maxwell school. Mr. Davison's address is 80 Shipley street, near Fourth, San Francisco.

Alterations to San Jose Building

Monson Bros. of San Francisco, who have been awarded a contract for alterations and additions to a two-story Class "C" store and lodge building for the San Francisco Investment Corporation, San Fernando and Second streets, San Jose, have let the steel contract to the Central Iron Works of San Francisco.

Architecture an Art

"Architecture is an art that is half a science," to quote Macaulay, but today new elements crowd in and materially diminish the proportion of art in the mixture. Mechanical and constructive demands are constantly growing, and commercial considerations become more insistent, so that the finished building is often merely a series of compromises, and not at all the realization of the designer's conception.



Frieze executed for Hotel St. Francis
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THE YOUNGER EXCAVATOR IN OPERATION

A Machine for Excavating

These are days when the owner wants to save on the cost of a building. If he can do this and at the same time be assured of a good job he will listen to the man who has something new to offer.

There has recently been placed upon the market an excavating machine which is everything that the word implies. It will excavate to any depth desired, and will remove about everything but solid rock. It is claimed that the machine will do the work of twenty-five men, in much less time than it would take them. Its capacity is said to vary from 500 to 1000 yards a day, according to the condition of the ground.

The machine is operated by either electricity or gas. It is particularly desirable in cases where speed is a factor. The work can be carried on both day and night, and the company operating it will take a contract and start to execute it on comparatively short notice. The company not only operates its own machines, but will sell or lease them. It is claimed that the excavator does the work much faster than the old method of hand and shovel and always at less expense.

In addition to excavating for buildings, the machine is used for canal and dyke work and gravel mining. The company is anxious to keep in touch with all general contractors with the idea of submitting to them a bid for excavating, no matter how small or how large the job.

The machine is the invention of J. M. Younger, a well-known California contractor, who has incorporated the Pacific Excavator Company, with offices in the Hearst building, San Francisco, and a branch office at the Builders Exchange, Oakland. Mr. Younger is president of the company, V. A. Younger is vice-president, and H. A. Rossek is secretary and treasurer.

Among the contracts for excavating taken are the Masonic Temple, in San Francisco the Ford Automobile Service building in the same city, a large hotel at Sixteenth and Clay streets, Oakland, and a postoffice building at Berkeley.

The excavator machine has also been used in excavating on the following buildings: Locomobile Company, San Francisco; Crane Company, San Francisco; Touraine Hotel, Oakland; Ellis Hotel, Oakland; Hotel Harrison, Oakland; Cianciarulo Building Oakland; Blood Building, Oakland; Postoffice, Berkeley.

Among the contractors who have used the machine with satisfactory results are the Van Sant Houghton Company, the P. J. Walker Company, and the Clinton Fireproofing Company, all of San Francisco.

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Some Good Reading for Cement Users

The Atlas Portland Cement Company, one of the largest dealers in white Portland cement in the United States, represented by live agencies in all the principal Pacific Coast cities, is publishing some interesting as well as instructive data about concrete and cement work, using as mediums two attractively printed and cleverly worded brochures which are published monthly and distributed gratis to any person interested.

One publication is called "The Contractor's Atlas," filled with practical ideas for the building contractor; the other book is "The Atlas Almanac," being a calendar of cement progress. The following article on "Structural Tones and Counter-tones," by H. S. Dudley, is an example of the class of good reading to be found in these pamphlets.

There has been some hesitancy among architects in the use of gray concrete in construction where beauty of appearance has been a properly large factor, as in residences.

This has been accounted in a measure for the tremendous popularity of White Portland Cement for such work because it combined the practical and esthetic features to great advantage. For one thing it can be readily colored to meet individual requirements.

For instance, a house of white cement stucco is in delightful contrast, and at the same time entire harmony with the green of summer foliage, or with other houses of warmer tints, and if properly placed and grouped, decidedly effective in winter, spring and fall as well.

Its sincerity of effect compared to the uncertainty of gray is instantly observed by even the untrained eye.

Another use of white cement is in the making of artificial "Cast Stone" for garden ornaments, benches, urns, statuary and the like. When crushed marble or other hard stone is used in the aggregate a very high polish can be given to the stone by rubbing, if desired, or washing the thoroughly hardened and dried concrete with diluted muriatic acid will give a brilliant, sparkling finish.

Cast stone is usually made in plaster of gelatine moulds. For such work a quick setting white is desirable, as this permits the prompt removal of the moulds.

An increasing use of white cement is in interior decoration. Staircases, wainscoting, floors (and often entire stucco walls of white in bathrooms, kitchens and laundries) are becoming more and more common because of their beauty, permanency and cleanliness.

The admixture of hydrated lime in such work with white is growing, as it tends to render the concrete waterproof and lengthens the setting time.

In large structures, such as office buildings, white cement is particularly valuable because of its non-staining feature for laying and backing stone, which it absolutely will not discolor. It is this advantage which caused the use of many hundred barrels of Atlas White in such buildings as the new Grand Central Terminal and Municipal building in New York, the forty-two story Smith building in Seattle and the giant Union Central Life building in Cincinnati.

Atlas White Portland Cement combines the well-known high quality and uniformity of Atlas with a particularly pleasing color.

It has been used in buildings in practically every section of the country—noteworthy evidence of acknowledged value.

Attractive Catalogue

A 300-page catalogue of building hardware specialties has just been issued by the Richards-Wilcox Co., of Aurora, Ill. It is devoted principally to door hangers and fire door fixtures and is profusely illustrated. A complete price list is included in it.

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Oil Burning Exhibit Attracts Many

(Contributed.)

The Fess System Company's exhibit at 5th avenue and E street, in the Palace of Machinery, P. P. I. E., is attracting a great deal of attention, especially among those visiting the fair from the East, as oil burning in house heating boilers and furnaces is entirely new to many of them, who long for the time when they can secure fuel oil and avail themselves of the many advantages resulting from the use of the Fess System rotary burner, which will give them a uniform temperature in their homes, without the labor of handling coal, which always means dust, ashes, smoke and soot.

The Fess System Company is maintaining the most complete exhibit of its kind in the grounds, firing continuously a low pressure steam heating boiler such as is used for heating of residences, apartment houses, office buildings, schools, etc., which clearly demonstrates the smokeless and almost noiseless operation of the equipment.

After careful investigation, these burners were selected for use in the California, Horticulture, and Hawaiian buildings, the two latter being very important on account of the even temperature that must always be maintained.

The life of the tropical plants in the Horticulture building depends on this equipment. The boiler house is located about 100 feet south of the main dome of the building. This contains two W-48-9 section American Radiator boilers, with a heating capacity of 27,450 square feet hot water, heating the water to 230 degrees temperature. The system contains upwards of 17,000 gallons of water, circulated by pumps at the rate of 225 gallons of water per minute, maintaining a steady temperature in the building of 68 degrees. The dome of this building alone contains over 4,000,000 cubic feet of air. These burners have been in constant operation since the 1st of November, operating twenty-four hours per day, and the highest consumption of oil during the coldest period was 750 gallons for twenty-four hours, and of course, much less during the warmer weather.

For the exhibit of fish in the Hawaiian building, it is necessary to maintain a temperature as high as 90 degrees in some of the tanks, and these burners were selected on account of their being automatically controlled so that they may maintain any predetermined temperature that is necessary, free from gases of combustion such as arise from gas and coal furnaces, so destructive to plant and animal life.

The burning of oil in this manner and by this system, is about the same as operating a gas burner, only requiring the starting of the motor, placing a piece of lighted newspaper or torch in the firebox and opening the oil supply valve—in fact the simplicity of its operation is a great curiosity to the Eastern visitors.

The Fess System has also become the recognized standard of the various School Departments, and has been installed in the following buildings, many of which are pictured in this number of the Architect and Engineer of California:

Woodland School building,
Santa Rosa High School,
Auburn High School,
Colfax School,
Woodland County Hospital,
Woodland Sanitarium,
Walling Hotel, Watsonville,
Monterey School,
Burlingame School,
King City High School,
Newman School,
Santa Rosa City Hall,
Martinez County Hospital,
Lettunich Building, Watsonville.
San Rafael Bank,
Arcata Hotel,

This equipment is also recognized by the Government and universally adopted for use in the new postoffice buildings, many of which are under construction at the present time throughout the Pacific Coast.

A House of Burned Clay

Within the grounds of the Panama-Pacific International Exposition, among the buildings that are dedicated to the various states of the Union, and occupying the space that was originally set apart for Colorado, stands a typical American residence. "Typical" is a particularly apt word, in this instance, since this building typifies several important movements.

The first is the home-building movement, which has its place in the heart of every American man and woman.

The second is the movement for a fire-resistant residence construction, which follows the educational work done by so many of the national magazines and by the daily newspapers.

The residence is typical in design. It follows no set style, but shows, instead, a careful study of the many styles that have made American residence architecture grow in beauty with each decade.

It is typical of the American family of moderate income. The cost of erection, in half a hundred different American cities, has been estimated. It is said to be in the neighborhood of $5,000, which, on a lot costing $1,000, would give a rental value of $50 a month.

The house was erected by a small group of men interested in the manufacture and sale of face building brick, with the added assistance of some of the men who make common building brick and other burned clay products that enter into building construction.

The house will be open to inspection all during the Exposition and will be visited by millions of prospective home-builders, who will carry away the lessons taught by its clever planning and sane construction, to reflect them in thousands of small cities and towns.

Creditable Art Cement Work

One of the busy California studios devoted to the manufacture of art cement work is that of G. Rognier & Co. at San Mateo, Cal. Their plant is located right at the railroad depot. They have on display in their show rooms some beautiful examples of lawn and garden ornaments, fountains, sun dials, vases, benches, pergolas, etc.

A beautiful example of art in cement work is the fountain in the Palace of Horticulture, right under the dome. Mr. Rognier is justly proud of this piece of work, which is the official exhibit of the Rognier Co. at the P. P. I. E.

Other work of this company is shown in the C. C. Morse Seed Co. exhibit, the Cal. Fruit Canners Association display and work on the New York State, New York City, Illinois and Utah buildings.

Those interested in this class of work would do well to correspond with or call on this firm.

Big Brick Contract

A contract for over 125 carloads of clay products for the Fresno State Normal School, one of the largest contracts ever let in California, has been awarded by the Winget Construction Company, contractors, to the Los Angeles Pressed Brick Company.

The contract involves one of the largest shipments of clay products ever secured by California manufacturers. Delivery will be made from the three plants of this company.

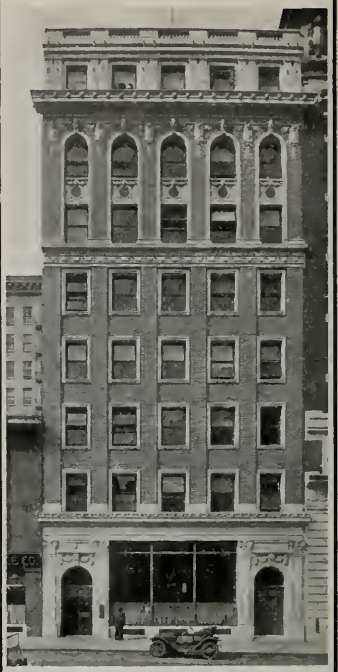
Approximately one hundred carloads of 12-inch red "ruffled" brick will be shipped from the Santa Monica factory.

From the Point Richmond plant, paving brick will be supplied, of which there are ten carloads, while as many electric of roofing tile will be shipped from the Los Angeles plant of the company.

Besides these materials, pressed brick, fire brick, fire proofing and quarry tile will be furnished from the Los Angeles plant.

Diamond Brick Company Improves Plant

The Diamond Brick Co. has recently completed the installation of an indicating-recording electric pyrometer, which will control the temperatures of the kilns in which their stock face brick are burned, and insure a uniformity of heat treatment for the product. The Diamond Brick Co. are supplying three shades of stock face brick for the new Clawson school building in Oakland, and they have furnished red brick for the terraces and walks of the Model Brick Residence, erected at the Panama-Pacific Exposition grounds by the Panama-Pacific Clay Products Association.



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Los Angeles Points the Way

(Contributed.)

The great success of the Rotary Oil Burner in Los Angeles (where 3,000 are already installed in the city and over 5,000 in Los Angeles county) has led to its coming north for the natural extension which follows successful introduction in one section.

An office has been opened in Oakland (159 Twelfth street), where the burner is shown and although no heralding of its coming has been made, already orders for 50 burners have been received.

The Rotary Oil Burner method eliminates all soot and smoke and the heat is so rapidly generated that it may be said that the uncommon heat can be secured on lighting. The principle is that of the revolving grate which mixes the oxygen and oil gas. The fan and grate are supported on a ball-bearing pivot, thus reducing the friction to a minimum.

The Rotary Oil Burner is said to be equally good for large or small installations, from a bungalow to a large hotel, public building or laundry.

In order to show the character and variety of its installations, a few of the buildings where it is in use are mentioned: Hollenbeck Hotel Apartments, Los Angeles; Manual Training School, Santa Ana; L. A. Seminary, Los Angeles; Potter Apartments, Venice; L. A. Title & Trust Co. building, Los Angeles; Long Beach Sanitarium, Long Beach; Anchor Cheese Factory, Compton Automatic Oven Co., Los Angeles; Berlin Bakery, Long Beach; Cal. Paint & Glass Co., Los Angeles; The Chocolate Shop, Los Angeles; Colby Glove Works, Los Angeles; Crawford Hotel Apartments, Los Angeles; Elks Club, Long Beach; El Segundo Canning Co., El Segundo; Whittier College, Whittier; Warner's Steel Casting Co., Redondo Beach; Varean Sanitary Potato Chip Co., Los Angeles; Spurgeon School, Santa Ana; Schuck Dye Works, Los Angeles; Seaboard Metal Works, Los Angeles; Rutherford Dancing Academy, Los Angeles; Lincoln School, Santa Ana; John Luckenbach Building, Los Angeles; McKee's Cafe, Los Angeles; Meji Laundry, Pasadena; O. K. Tile Co., Los Angeles; Ritz Apartments, Los Angeles; Leasure Bakery, El Segundo; Japanese Sunset Hand Laundry, Long Beach; Jewel Co., Los Angeles; Grand Pacific Hotel, Los Angeles; Glendale Hotel, Glendale; Finkle Arms Apart-

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nicia Barracks, Benicia, Calif.; C. H. Crocker residence, Belvedere, Calif.; Hotel Del Portal, El Portal, Calif.; Hotel Monte Rio, Monte Rio, Calif.

Plans for New Water System

Sacramento will have a single water distributing system instead of a domestic and high pressure fire system, according to a report made to the City Commission by G. H. Wilhelm, who has been employed, with Professor Charles Gilman Hyde, to pass on plans for the water and sewer mains and select a source of water supply for the city. Wilhelm and Hyde are revising the plans to increase the pressure in the business section from 40 to 45 pounds to from 75 to 80 pounds, decreasing to from 60 to 65 in the residence district. This pressure in bigger pipes will supply an adequate fire and domestic supply.

Two New Theatres

The city of Porterville is to have a new theatre to replace the one recently destroyed. A. R. Moore of that city will erect a Class "B" building to cost $25,000. It will have a seating capacity of 900 persons.

Architect B. J. Joseph of San Francisco has prepared plans for a new theatre to cost about $35,000, and to be erected at Vallejo. The building will be of reinforced concrete, and will have a seating capacity of 600 persons. A steam-heating plant with oil burner will be included in the equipment. The owner is Albert Bernheim.

Charles F. Mau

Charles F. Mau, early resident of California and a member of San Francisco Chapter, American Institute of Architects and the Royal Arch Masons, died April 28th at his home, 825 Filbert street, Oakland, after a three months' illness following a stroke of paralysis. Mr. Mau was 67 years of age and a native of Hamburg, Germany. He is survived by a widow and two sons, Louis K. and Carl F.

After serving in the Franco-Prussian war, Mr. Mau came to America, where he settled in Chicago. After a brief stay in that city he moved to Oakland, and while practicing architecture there designed many large structures for that city and San Francisco.

Noted Sculptor Passes

In the passing of Karl Theodore Francis Bitter, chief of the department of sculpture of the Panama-Pacific Exposition, the world has lost a sculptural expert of extraordinary talent. He had enriched three great fairs by his distinctive judgment in co-ordinating the sculptural features of the Buffalo, St. Louis and San Francisco expositions.

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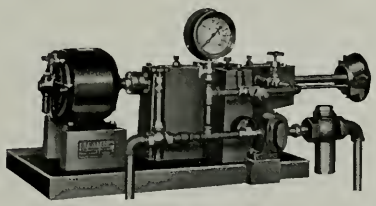

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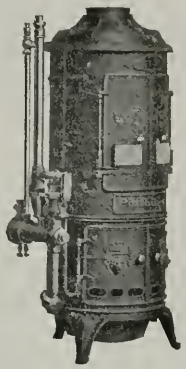

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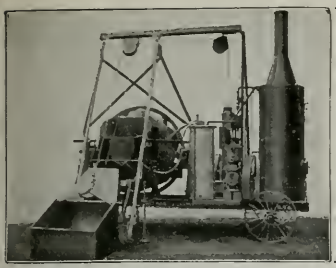

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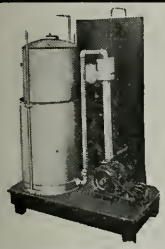

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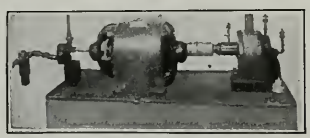

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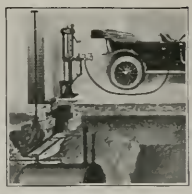

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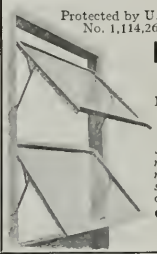

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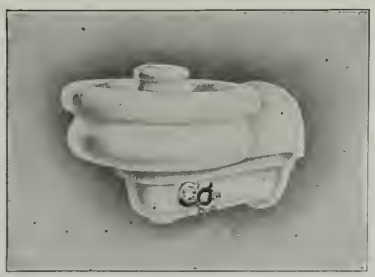

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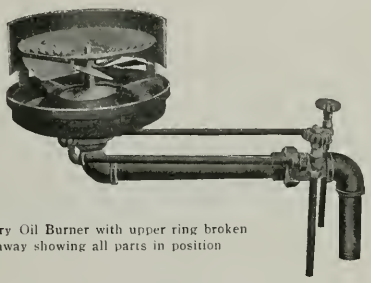

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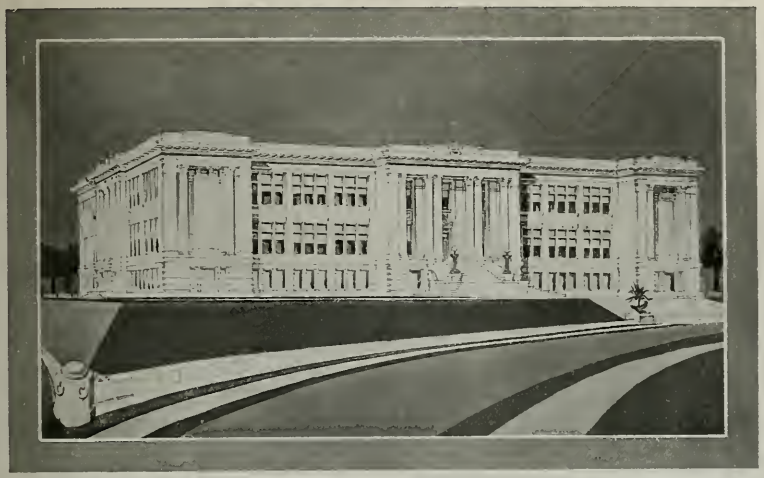

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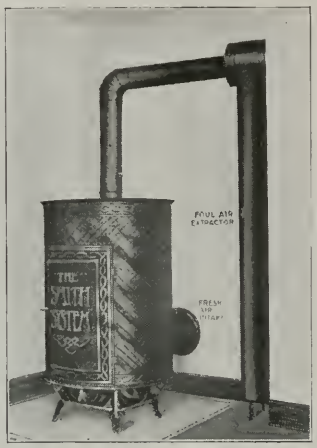

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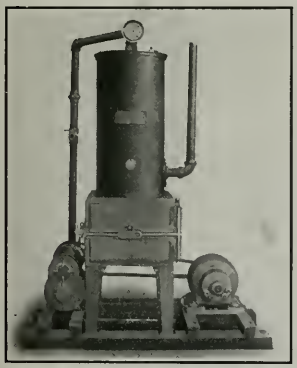

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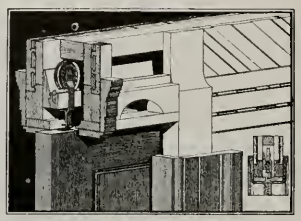

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When writing to Advertisers please mention this magazine.

Architects' Specification Index

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G. Rognier & Co., 233 R. R. Ave., San Mateo.
G. Tomagnini & Co., 219 Tenth St., San Francisco.
Sculptors' Worksbop. S. Miletin, 1705 Harrison St., San Francisco.

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Gladding, McBean & Company, Crocker Bldg., San Francisco.
Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.
Independent Sewer Pipe & Terra Cotta Co., 235 S. Los Angeles St., Los Angeles.

ART GLASS
Fresno Art Glass Co., 2124 Tuolumne St., Fresno.

AUTOMATIC SPRINKLERS
Scott Company, 243 Minna St., San Francisco
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

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M. G. West Co., 353 Market St., San Francisco.
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T. H. Meek & Co., 1157 Mission St., San Francisco.
H. H. Winner Company, Nevada Bank Bldg., San Francisco.

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H. N. Cook Belting Co., 317-319 Howard St., San Francisco.

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A. H. Andrews Co., 728 Mission St., San Francisco.

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Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
J. B. Nabors & Sons, Kobl Bldg., San Francisco.
Pacific Coast Casualty Co., 416 Montgomery St., San Francisco.

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California Paving Brick Co., Phelan Bldg., San Francisco.
Diamond Brick Co., Balboa Bldg., San Francisco.
Gladding, McBean & Company, Crocker Bldg., San Francisco.

BRICK—PRESSED, PAVING, ETC.—Continued.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Steiger Terra Cotta & Pottery Works, Mills Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

BRICK AND CEMENT COATING
Wadsworth, Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Pacific Coast Agents.)
Glidden Products, sold by Whittier-Coburn Co., Howard and Beale Sts., San Francisco; California Glass & Paint Company, Los Angeles.

BRICK STAINS
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

BUILDERS' HARDWARE
Baker & Hamilton, agents for Corbin hardware, San Francisco.
Bennett Bros., agents for Sargent Hardware, 514 Market St., San Francisco.
Pacific Hardware & Steel Company, San Francisco, Oakland, Berkeley, and Los Angeles.
Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.

BUILDING MATERIAL, SUPPLIES, ETC.
Pacific Building Materials Co., 523 Market St., San Francisco.
Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
C. F. Pratt Building Material Co., Hearst Bldg., San Francisco.

CASTINGS
Pacific Foundry Company, Harrison and 18th Sts., San Francisco.

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Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.
Medusa White Portland Cement, sold by Building Material Co., Inc., Monadnock Bldg., San Francisco.

CEMENT EXTERIOR WATERPROOF COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See distributing Agents on page 30.)
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

"GRANT CONCRETE MIX" The only properly proportioned mix in this market. Composed of hard, clean, fresh-water gravel, free from sand stone, and contains about 25% of crushed rock and necessary amount of sand.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR WATERPROOF COATING —Continued.

Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.

Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)

CEMENT EXTERIOR FINISH

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.

Concrete Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.

Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

CEMENT TESTS—CHEMICAL ENGINEERS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

Fink & Schindler, 218 13th St., San Francisco.

CHUTES—GRAVITY SPIRAL

Insley Gravity System for pouring concrete, represented by Garfield Myers, Hearst Bldg., San Francisco.

COLD STORAGE PLANTS

Vulcan Iron Works, San Francisco.

T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

CLOCKS—TOWER

Decker Electrical Construction Co., 111 New Montgomery St., San Francisco.

COMPOSITION FLOORING

Fibrestone & Roofing Co., 971 Howard St., San Francisco.

COMPRESSED AIR CLEANERS

The B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.

Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.

Invincible Vacuum Cleaner, sold by R. W. Foyle, 149 New Montgomery St., San Francisco.

Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION

American Concrete Co., Humboldt Bank Bldg., San Francisco.

Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.

Foster, Vogt Co., Sharon Bldg., San Francisco.

P. A. Palmer, Monadnock Bldg., San Francisco.

International Concrete Construction Company, West Berkeley, Cal.

CONCRETE GRAVITY CHUTE

Insley Mfg. Co., represented by Garfield Myers, Hearst Bldg., San Francisco.

CONCRETE MACHINERY

Garfield Myers, factory representative of Insley Manufacturing Company, and Marsh-Capron Company, Hearst Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. Factory branch, 473-485 Sixth St., San Francisco.

Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.

CONCRETE PILES

McArthur Concrete Pile Company, Chronicle Building, San Francisco.

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

Clinton Welded Reinforcing System, L. A. Norris, 140 Townsend St., San Francisco.

"Kahn System," see advertisement on page 31, this issue.

Interoational Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

Triangle Mesh Fabric, Sales Agents, Pacific Building Materials Co., 523 Market St., San Francisco.

Twisted Bars, sold by Woods & Huddart, 444 Market St., San Francisco.

CONCRETE SURFACING

"Concreta" sold by W. P. Fuller & Co., San Francisco.

Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.

Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

Underwriters' Labelled Fire Doors and Windows—Kalamein Interior Metal Doors and Trim — Metal Corner Bead — Metal Furniture, etc.

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GASPARD & HAMMOND

BUILDING CONSTRUCTION

425 Sharon Building, 55 New Montgomery St. San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Arthur W. Biggers, 112 Market St., San Francisco.
- Marius F. Bos, New Call Bldg., San Francisco.
- Dunnavant-Oakley Co., 1430 Powell St., San Francisco.
- Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
- Collman & Collman, 526 Sharon Bldg., San Francisco.
- Construction & Engineering Co., Hobart Bldg., San Francisco.
- M. Fisher, California-Pacific Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- Gaspard & Hammond, Sharon Bldg., San Francisco. (See card above.)
- Howard S. Williams, Hearst Bldg., San Francisco.
- Harvey A. Klyce, Sheldon Bldg., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- A. H. Leaf Co., New Call Bldg., San Francisco.
- Lester Stock, 12 Geary St., San Francisco.
- McLaren & Peterson, Sharon Bldg., San Francisco.
- R. W. Moller, 185 Stevenson St., San Francisco.
- John Monk, 216 Sharon Bldg., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- Robert Trost, 26th and Folsom Sts., San Francisco.
- Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

CORK FLOORING
- "Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

CORNER BAR
- Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BEAD
- Capitol Sheet Metal Works, 1827 Market St,, San Francisco.
- United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, new Call Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

DAMP-PROOFING COMPOUND—Continued.
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Imperial Co., 183 Stevenson St., San Francisco.
- Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)
- "Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.
- Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

DOOR HANGERS
- McCabe Hanger Mfg. Co., New York, N. Y.
- Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Boynton Electric Co., 504 Rialto Bldg., San Francisco.
- Central Electric Co., 618 Mission St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

ELECTRICAL ENGINEERS
- Chas. T. Phillips, Pacific Bldg., San Francisco.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
- B. C. Van Emon Elevator Co., 235 First St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
- Elevator Supply & Repair Co., Underwood Bldg., San Francisco

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Telephone Sutter 329 971 Howard St., SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

ENGINEERS
F. J. Amweg, 700 Marston Bldg., San Francisco.
W. W. Breite, Clunie Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

EXCAVATING CONTRACTORS
Pacific Excavator Company, Builders' Exchange, Oakland.

FIRE EXIT DEVICES
Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.

FIRE ESCAPES
Burnett Iron Works, Fresno, Cal.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. H. Andrews, 728 Mission St., San Francisco.
A. J. Forbes & Son, 1530 Filbert St., San Francisco.
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
T. H. Meek Co., 1157 Mission St., San Francisco.

FLAG POLES—TACKLE, ETC.
Pacific Foundry Company, Harrison and 18th Sts., San Francisco.
Bolander & Hallawell, 270 First St., San Francisco.

FLAG POLE TOPS
Bolander & Hallawell, 270 First St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.

FLOOR VARNISH—Continued.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

FLOORING—MAGNESITE
Fibrestone & Roofing Co., 971 Howard St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

GAS FURNACES
Cole Gas Furnace, Fisher & Klauser, distributors, Lick Bldg., San Francisco, 1764 Broadway, Oakland.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

GARDEN FURNITURE
G. Tomagnini & Co., 219 Tenth St., San Francisco.
O. S. Sarsi, 123 Oak St., San Francisco.

GAS GENERATORS
Utility Gas Generator Co., 340 Sansome St., San Francisco.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRADING CONTRACTORS
Pacific Excavator Company, Builders' Exchange, Oakland.

GRANITE
California Granite Co., Sharon Bldg., San Francisco.
Raymond Granite Co., Division and Potrero Sts., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Grant Gravel Co., Flatiron Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.
American Keene Cement Co., 333 Monadnock Bldg., San Francisco.

HARDWARE
Corbin Hardware sold by Baker & Hamilton, San Francisco and Los Angeles.
Russwin Hardware, Joost Bros., San Francisco.
Pacific Hardware & Steel Company, representing Lockwood Hardware Co., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
Russell & Erwin Manufacturing Co., Commercial Bldg., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California. (See advertisement above.)

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heater Company, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Charles T. Phillips, Pacific Building, San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.

HEAT REGULATION
- G. E. Witt Company, Inc., 850 Howard St., San Francisco.
- Johnson Service Company, 149 Fifth St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Ochsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
- American Keene Cement Co., Monadnock Bldg., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.
- E. K. Wood Lumber Company, East Oakland, California.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Tilden Lumber Company, foot of Unversity Ave., Berkeley, Cal.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

MARBLE
- G. Tomagnini & Co., 219 Tenth St., San Francisco.
- Sculptor's Workshop. (See adv., page 134.)

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Second and Federal Sts., San Francisco.
- L. A. Norris & Co., 140 Townsend St., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco; 117 Franklin St., Oakland.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco
- Capitol Sheet Metal Works, San Francisco and Oakland.
- A. H. Andrews Co., 728 Mission St., San Francisco.

METAL SHINGLES
- Meurer Bros., 630 Third St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

OIL BURNERS
- S. T. Johnson Co. (see adv. below).
- American Standard Oil Burner Co., Seventh and Cedar Sts., Oakland.

Crude Oil Burners Operating Kitchen Ranges in Government Barracks at Fort Winfield Scott

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Sales Office :: Howard and Beale Streets, San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS—Continued
- W. S. Ray Manufacturing Company, 218 Market St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- Rotary Oil Burner Company, 159 Twelfth St., Oakland.
- G. E. Witt Oil Burner Company, 850 Howard St., San Francisco.

ORNAMENTAL IRON AND BRONZE
- American Art Metal Works, 13 Grace St., San Francisco.
- Brode Iron Works, 31-37 Hawthorne St., San Francisco.
- Burnett Iron Works, Fresno.
- Palm Iron & Bridge Works, Sacramento.
- California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
- Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
- Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
- D. Zelinsky, 564 Eddy St., San Francisco.

PAINT FOR CEMENT
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Concreto Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

PAINTS, OILS, ETC.
- Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.
- W. P. Fuller & Co., all principal Coast cities.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
- California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
- California Photo Engraving Co., 121 Second St., San Francisco.

PHOTOGRAPHY
- R. J. Waters Co., 717 Market St., San Francisco.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, 985 Folsom St., San Francisco.
- C. C. Morehouse, Crocker Bldg., San Francisco.
- J. J. Connolly & Son, Builders' Exchange, San Francisco.
- J. C. McLeod, Holbrook Bldg., San Francisco.

PLUMBING
- Scott Co., Inc., 243 Minna St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco

PLUMBING FIXTURES, MATERIALS, ETC.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Crane Co., Second and Brannan Sts., San Francisco.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
- Glauber Brass Manufacturing Company, 1107 Mission St., San Francisco.
- Miller-Enwright Company, Sacramento, Cal.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PUMPS
- Chicago Pump Company, 612 Howard street, San Francisco.

REFRIGERATORS
- McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
- Vulcan Iron Works, San Francisco.

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EVERYTHING IN ROOFING

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

REVERSIBLE WINDOWS
Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Pacific Building Materials Co., 523 Market St., San Francisco .
C. F. Weber & Co., 365 Market St., San Francisco.
Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
Grant Gravel Co., Flat Iron Bldg., San Francisco.
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
National Roofing Company, Plaza Bldg., Oakland.
"Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
Mackenzie Roof Co., 425 15th St., Oakland.
United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
M. G. West Co., 353 Market St., San Francisco.

SANITARY DRINKING FOUNTAINS
N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.
J. B. Clow & Son., Hearst Bldg., San Francisco.

SANITARY BATH FIXTURE
"Boudoir" batb tub, mfrd. by Improved Sanitary Fixture Co., 411 S. Los Angeles St., Los Angeles. Sold by all plumbing houses.

SANITARY KITCHEN SINK
Improved Sanitary Fixture Company, 411 S. Los Angeles St., Los Angeles.

SASH CORD
Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.
A. H. Andrews & Co., 728 Mission St., San Francisco.

SEWAGE EJECTORS
Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK, SKYLIGHTS, ETC.
Capitol Sbeet Metal Works, 1927 Market St., San Francisco.
U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Waterbouse & Price, San Francisco, Los Angeles and Portland.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SLATE ROOFING
Fiberstone & Roofing Co., 971 Howard St., San Francisco.

STEEL AND IRON—STRUCTURAL
Burnett Iron Works, Fresno, Cal.
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Brode Iron Works, 31 Hawthorne St., San Francisco.
Judson Manufacturing Co., 819 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, agents, 135 Kearny St., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J. 3435, 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, Twentietb and Indiana Sts., San Francisco.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.
Woods & Huddart, 444 Market St., San Francisco.

STEEL PRESERVATIVES
Wadsworth, Howland & Co., Boston Mass. (See Adv. for Coast agencies.)

STEEL BARS FOR CONCRETE
Kahn and Rib Bars, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Woods & Huddart, 444 Market St., San Francisco.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

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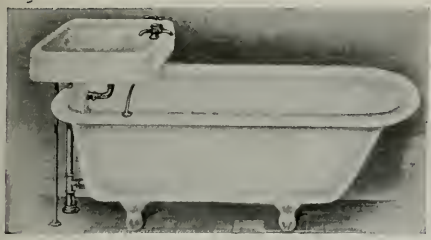

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The astonishing convenience and increased comfort afforded by "The Boudoir" bath fixture over the old style fixtures have been proven, and users everywhere are making the facts known. Repeat orders are multiplying sales rapidly.

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LARGER LAVATORY—Used from either side or end.
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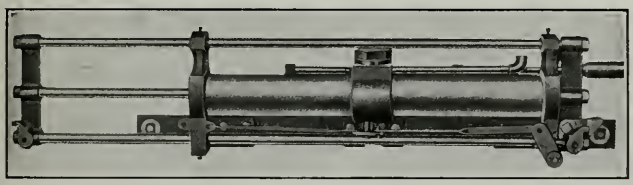

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RUSSELL & ERWIN MANUFACTURING CO.

The American Hardware Corporation, Successor

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL STUDDING
Collins Steel Partition. Parrott & Co., San Francisco and Los Angeles.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., W. W. Thurston, Rialto Bldg., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STONE
California Granite Co., 518 Sharon Bldg., San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
Colusa Sandstone Co., Potrero Ave. and Division St., San Francisco.

STORAGE SYSTEMS—GASOLINE, OIL, ETC.
S. F. Bowser & Co., 612 Howard St., San Francisco.

SURETY BONDS
Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
J. B. Nabors & Sons, Kohl Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland, Mills Bldg., San Francisco.
Pacific Coast Casualty Co., Merchants' Exchange Bldg., San Francisco.

TEMPERATURE REGULATION
Johnson Service Company, 149 Fifth St., San Francisco.
G. E. Witt Company, Inc., 850 Howard St., San Francisco.

THEATER AND OPERA CHAIRS
A. H. Andrews, 728 Mission St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco.

TELEPHONE EQUIPMENT
Telephone Electric Equipment Co., 612 Howard St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 561 Mission St., San Francisco.

TILE FOR ROOFING
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Denison Hollow Interlocking Blocks, Ochsner Bldg., Sacramento.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
Western States Porcelain Co., Richmond, Cal.

VACUUM CLEANERS
Giant Stationary Suction Cleaner, manufactured by Giant Suction Cleaner Co., 731 Folsom St., San Francisco and Third and Jefferson Sts., Oakland.
Invincible Vacuum Cleaner, R. W. Foyle, Agent, San Francisco.
"Tuec" Air Cleaner, manufactured by United Electric Co., 110 Jessie St., San Francisco.

VALVES
Jenkins Bros., 247 Mission St., San Francisco.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
Glidden Varnish Co., Cleveland, O., represented on the Pacific Coast by Whittier-Coburn Co., San Francisco.
Standard Varnish Works, 113 Front St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 365 Market St., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 237 Powell St., San Francisco, and Thirteenth and Clay Sts., Oakland.
Hoffman Heater Co., 397 Sutter St., San Francisco.

WALL BEDS
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Concreto Cement Coating, manufactured by the Muralo Co. (See page 124.)
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Glidden's Concrete Floor Dressing and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
Imperial Co., 183 Stevenson St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Wadsworth, Howland & Co., Inc. (See Adv. for Coast agencies.)

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

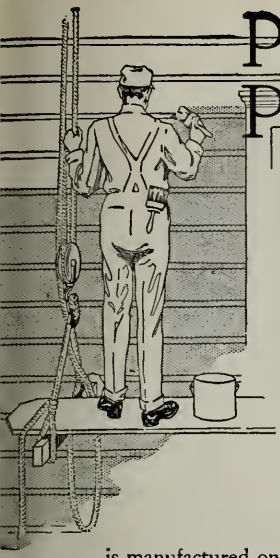
WHITE ENAMEL FINISH
"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 113 Front St., San Francisco.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Co. (See Adv. for Coast distributors.

WINDOWS—REVERSIBLE, ETC.
Perfection Reversible Window Co., 2025 Market St., San Francisco.
Whitney Adjustable Window Co., San Francisco. (See page 25.)
Hauser Reversible Window Co., Balboa Bldg., San Francisco.

WINDOW SHADES
Top Light Shade Co., 737 Market St., Oakland.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
L. A. Norris Co., 140 Townsend St., San Francisco.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 561 Mission St., San Francisco.



Pacific Coast Paint For Pacific Coast Climate

You paint your nouse to protect it from the weather; and the extent of that PROTECTION depends largely upon the brand of paint you use.

Almost any paint will look well for a while, but you want a paint that will continue to look good by resisting the attacks of the weather.

The climate of the Pacific Coast is quite different from that of the eastern states. So to get a paint that will last longest you must have one that is specially prepared for this climate.

Bass-Hueter Paint

is manufactured on the Pacific Coast especially for the climate of the Pacific Coast.

It required many years of study, laboratory testing and experimenting to produce the Bass-Hueter formula.

And the test of time through many years has proven that Bass-Hueter Paint gives better results on this coast than any other paint on the market.

It is not only the question of painting your house that you should consider; the most important question is RE-PAINTING.

To avoid the expense of re-painting for many years see that your painter uses Bass-Hueter Paint—the paint that is manufactured on the Pacific Coast for the climate of the Pacific Coast.

Remember that you are the one that pays the bill and you should have the say as to what paint should be used.

We carry Bass-Hueter Paints in all the colors and add our guarantee to that of the manufacturers that the paints will give absolute satisfaction.

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HIGH GRADE-BEST MADE FOR ANY TRADE

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A Substantial Sound-Proof Preservative Plaster

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For Sound and Economical Concrete Specify

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Crushed and screened concrete ***Gravel and Rock.*** ¶ Sharp, clean ***Concrete Sand, or Topping.*** All from fresh water, thoroughly washed, and in ***any size or mixture, with or without sand,*** as desired. ¶ ***Free from Salt.***

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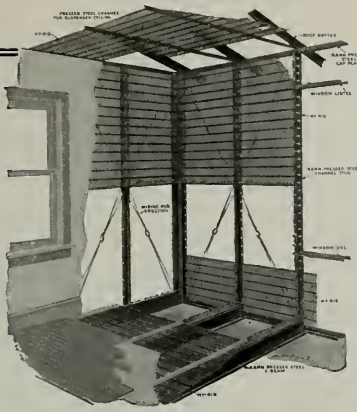

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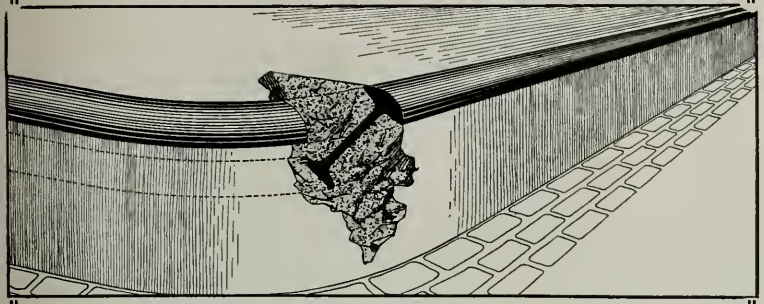

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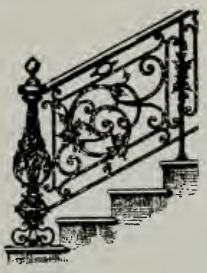

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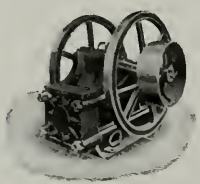

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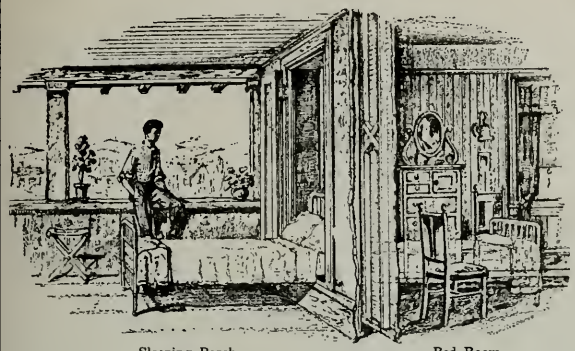

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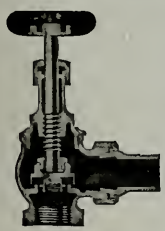

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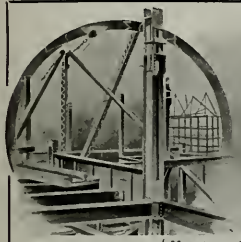

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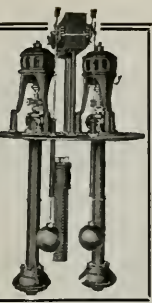

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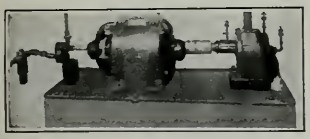

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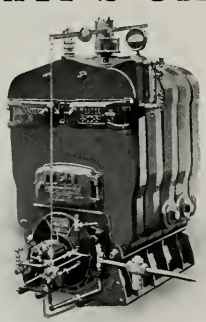

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By LOUIS CHRISTIAN MULLGARDT, F. A. I. A.

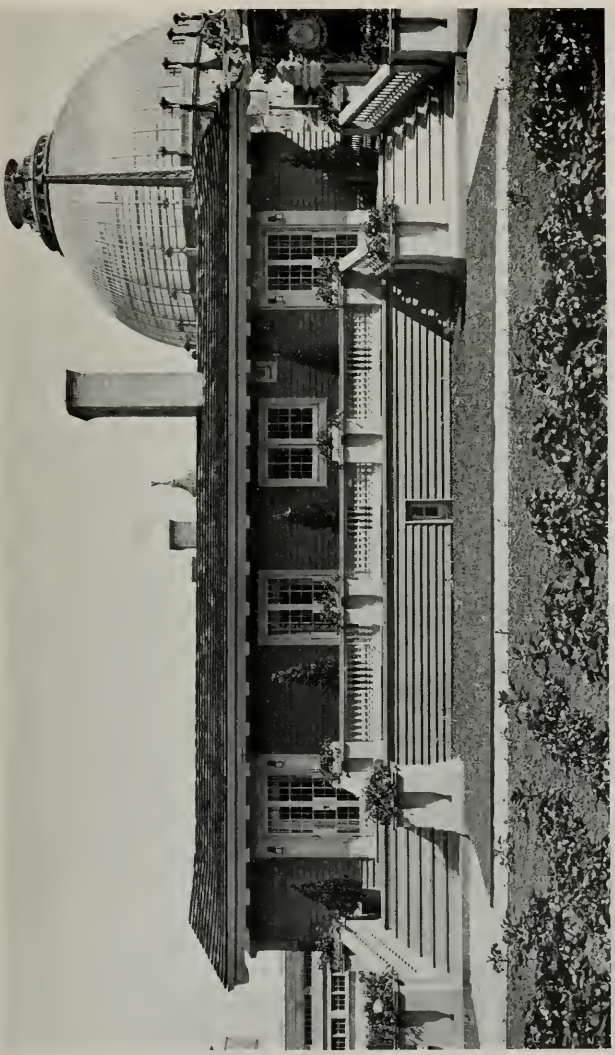
PEOPLE who know good architecture when they see it gauge the ability of architects by that which has been built and the taste of the community as well for allowing it.

The percentage of well designed homes as compared with those which are poorly designed, stands at a ratio of about one in twenty. At least fifty per cent of inferior architectural designing is done by men and women who are not architects; they have neither training or knowledge of architecture. The majority of homes are constructed from plans prepared by contractors, builders, real estate speculators, owners and over-ambitious draftsmen who are deficient in architectural training and the fundamental essentials constituting good design. The rest of all inferior home architecture is ascribable to practitioners who rank with quack doctors and shyster lawyers. The ratio of qualified designers is roughly estimated at fifteen per cent of the licensed practitioners.

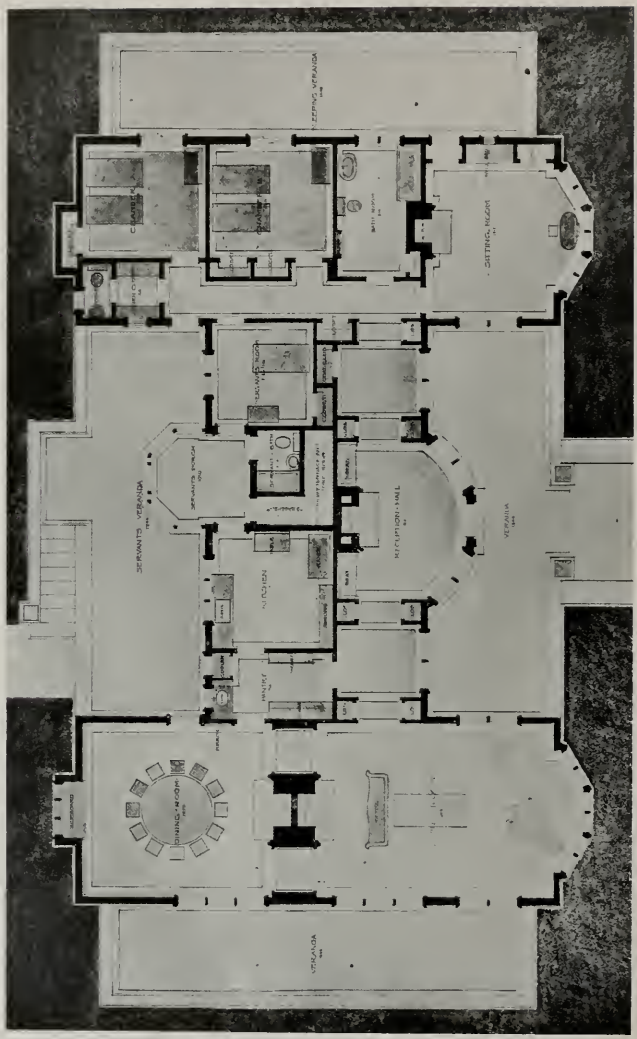
Every capable architect knows by experience that office expense incurred in designing a successful small home is relatively so great as to require a special kind of personal interest to make this class of work seductive. A certain class

* The accompanying plates show the possibilities of redwood for home architecture. The bungalow illustrated here is of redwood and is one of the points of interest at the Panama-Pacific Exposition.

NORTHWEST VIEW, "HOME OF REDWOOD," SHOWING ENTRANCE TO SERVICE QUARTERS
LOUIS C. MULLGARDT, ARCHITECT



SOUTH END, "HOME OF REDWOOD," SHOWING VERANDA TO CHAMBERS
LOUIS C. MULLGARDT, ARCHITECT



FLOOR PLAN, "HOME OF REDWOOD"
LOUIS C. MULLGARDT, ARCHITECT

DINING ROOM, "HOME OF REDWOOD"
LOUIS C. MULLGARDT, ARCHITECT
Redwood Panels finished California Brown

ENTRANCE HALL, "HOME OF REDWOOD"
LOUIS C. MULGARDT, ARCHITECT
Redwood Panels finished Natural Redwood

WEST END OF LIVING ROOM, "HOME OF REDWOOD". LOUIS C. MULLGARDT, ARCHITECT
Redwood panels finished fawn color.

of practitioner commonly scoffs at the enthusiasm which prompts qualified men to undertake residential work especially of the smaller type. Whether this is due to manifestly inadequate compensation for this class of work, or for other reasons, would require personal investigation to determine. Their attitude bears somewhat the same relation to architecture as in the case of physicians who decline to render professional service where there is no assurance of adequate remuneration. In both cases money is first in importance.

Approximately ninety per cent of all structures are designed as homes. This ninety percent largely determines the general character of a place. San Francisco's exceedingly low average in residence architecture causes many a heart ache to people who see and understand. More apologies are extended to visitors on that account than any other which concerns civic interest.

To show San Francisco off to advantage one must be very careful to arrange a circuitous itinerary to avoid giving architectural shocks to visitors, until we are safely within Golden Gate Park, the Presidio or on the scenic road over Twin Peaks, from which altitude they may observe a wonderful city in mass but not in detail. Our built up hills and valleys present a wonderful sight when viewed from a distance, whereas our built up streets viewed at close range do not, except in occasional spots where attractive homes exist, but they are so out-numbered by the rank and file as to leave their effect negligible.

Our buildings and cities can be no better than they are designed. We will not improve the present state of things until we establish some adequate means which will produce a higher standard of home architecture. This can not be done without a clear understanding and appreciation of personal responsibility to the community. It must be understood by every citizen who builds that he owes the community in which he lives the same consideration that he owes himself and his family. Every good architect understands this. The good citizen who builds will understand that even to the best designer it is a most difficult problem to design a successful home. They will know that those who

LOUNGE HALL, "HOME OF REDWOOD"
Redwood panels finished natural redwood.

SITTING ROOM, "HOME OF REDWOOD"
LOUIS C. MULLGARDT, ARCHITECT
Redwood panels finished in velvet brown.

BEDROOM, "HOME OF REDWOOD"
LOUIS C. MULLGARDT, ARCHITECT
Panelled walls of redwood finished in mauve color.

KITCHEN, "HOME OF REDWOOD"
LOUIS C. MULLGARDT, ARCHITECT
Redwood walls finished in white enamel.

build do manifest their worth or unworth as citizens in that which they cause to be built and thereby are directly responsible for.

Wonder and praise is customarily manifested for large and elaborate structures. Any architect who qualifies by designing successful homes can also qualify in a superior manner in other work. His work is destined to be superior to that designed by men not qualified in the art of designing successful homes. Home building constitutes the severest test which the profession encounters. Our buildings and cities will be no better than the designs call for.

* * *

A Just Criticism

The following communication signed by Albrecht Von Montgelas, L. L. D., was published in the San Francisco Examiner of June 10, and in part is a reiteration of an editorial which was printed in this magazine in April, 1915, under the caption: "Why No Architectural Display at the Fair?"

Under the auspices of the San Francisco Architects' Club the Pacific Coast Architectural League has opened an exhibit at Stockton and O'Farrell streets.

Three facts are brought about by this exhibit.

First, that there are in San Francisco, architects who can show their work, especially as far as residence building is concerned, without having to fear a comparison, the leading architects of the country included.

Second, the fact is impressed on the public mind, through this exhibit; arranged in a furniture store, that San Francisco has no art gallery, or any other kind of municipally or privately owned building which would provide the proper setting for such an exhibition.

Third, that in this exposition year, 1915, the San Francisco architects were prevented from showing their ability, skill and creative spirit in an adequate exhibition on the Exposition grounds.

I have been told that the reason why the American Institute of Architects and its San Francisco branch did not exhibit at the fair was that the Exposition directors refused to classify architecture among the fine arts, and allotted it a place not in the Palace of Fine Arts or in a separate building, but in the Liberal Arts building.

The first part of the story I can hardly believe.

Everybody must know that architecture is not only a fine art, but that it is the mother of the two sister arts, painting and sculpture.

The first form of painting was mural painting, the first use of sculpture was in decorative work on walls and pillars.

I wonder what Michael Angelo would have said to the stand taken by the Exposition authorities?

The assignment of the American Institute of Architects to the Liberal Arts building would therefore have been wrong in principle.

Anyway, the definition of liberal arts seems to be rather confused.

Judging from the exhibits in the Liberal Arts building, we have to count among them: Rouge, talcum powder, cosmetics, perfumes and soaps, typewriters, cash registers, divers outfits, hospital supplies, cotton bandages and drugs, and the Methodist Book Concern.

No wonder San Francisco architects didn't like the company. * * *

The city ought to take interest and pride in its architects.

They, more than any other body of citizens, are responsible for the rebuilding and beautifying of San Francisco.

* * *

Questionable

"Blinks says that when he was young he was the architect of his own fortune."

"Didn't they have any building inspectors in those days?"—*Philadelphia Public Ledger.*

The 1915 San Francisco Architectural Club Exhibit*

By W. GARDEN MITCHELL, A. I. A.

THERE is a great difference between good architecture and good drawing, and although I have been fully alive to this fact for many years, time and again I have been trapped by the glamour of color, the trick of the pencil, the movement of street life or a happy contrast of light and shade. Most of us prefer a picture to a diagram, because the former appeals instantly to the eye, and saves us the more laborious task of analysis and reflection demanded by that which requires both study and imagination to understand. It cannot be gainsayed that both architectural design and draughtsmanship have advanced considerably in the last twenty years in this country, but the tendency has been for draughtsmanship to outrun design.

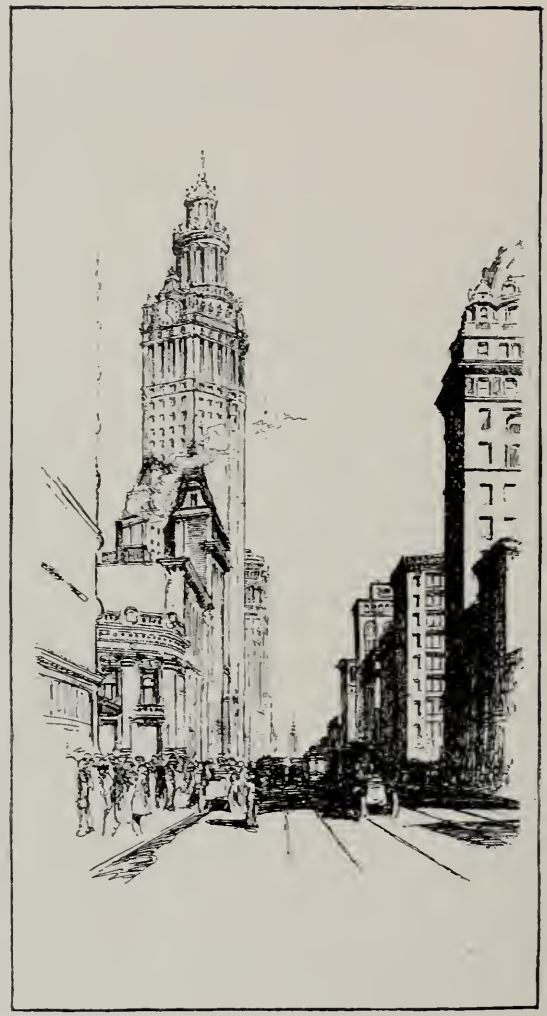
If one looks at the drawings prepared by Inigo Jones or Christopher Wren a few centuries ago and notes the few and simple lines used to express their ideas, one is forcibly convinced of the wide difference between good building and good drawing. In an exaggerated form a good drawing may be a mere trick of the pencil or brush to produce a pleasing thing that should not be considered more seriously than wall paper, and should never go beyond the material on which it is so admirably rendered. Building is a very different thing from this, and a master builder dealing with a problem with which he already has had experience, could do very well even without drawings. Make it like the banquet hall at Hampton Court, only twice as large. Yes, that seems practical; it will stand to be so enlarged without being illogical; we will change the material to stone and work out the details as we proceed. In this way a builder, or architect, as we call them nowadays, carrying his proportions, projections, thicknesses, construction and material in his head, and reinforced by the test of previous experience and an existing model and good taste, can do very well; not only well, but much better than many of our clever draughtsmen who allow themselves to be deluded by the hypnotic influence of their all to facile pencil and brush.

As the proof of a pudding is in the eating, so the only test of a building is in its capacity to claim favorable attention not only on the day it is completed, but in the decades that follow.

To take two local examples as illustrative. While I cannot recollect having seen the drawings of the new Palace Hotel, it would be difficult to imagine them as having made a very fascinating picture. Yet the building is so simple in exterior, logical in construction, honest in material, that it has grown steadily in favor, and today stands out conspicuously as a restful oasis in the desert, cool and calm amid the drifting sand and barren rocks of a more restless, more ambitious and less successful architecture that surrounds it.

A few yards further up the street we have the Hearst building. A more delightful drawing, exhibiting all the skill of present-day draughtsmanship one has seldom come across. Such was the picture as expressed on paper, but the finished product; well, it has fallen so far short of the promise set forth in the drawing, that one has only condemnation from sidewalk to skyline, and the best one can say now of it is, that one fails to notice it. Beware of good draughtsmanship. A good architect may be a good draughtsman, and it is most desirable that he should be, but a great many good draughtsmen are very poor architects, and the warning that they should constantly repeat to themselves is to guard against the illusions of fine draughtsmanship, of things that may look well on paper, but by lack of study or lack of judgment will build very badly.

* The illustrations accompanying this article are selections by the Editor from the 1915 Year Book.

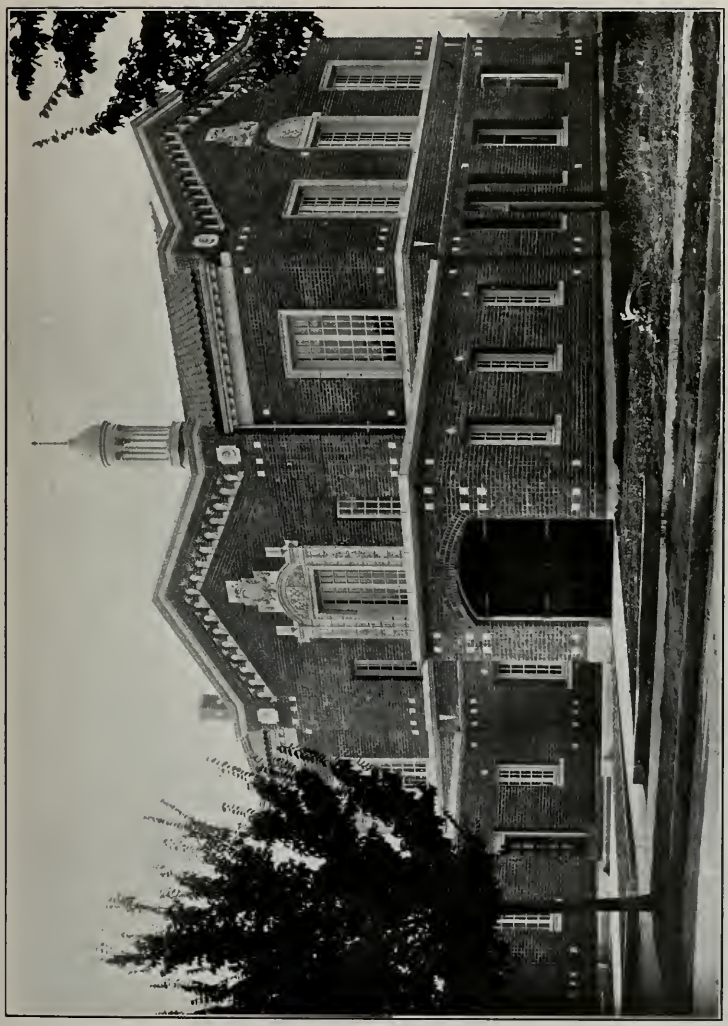


SKETCH LOOKING DOWN MARKET STREET, SAN FRANCISCO
NEW CHRONICLE BUILDING ON THE LEFT
WILLIS POLK & CO., ARCHITECTS

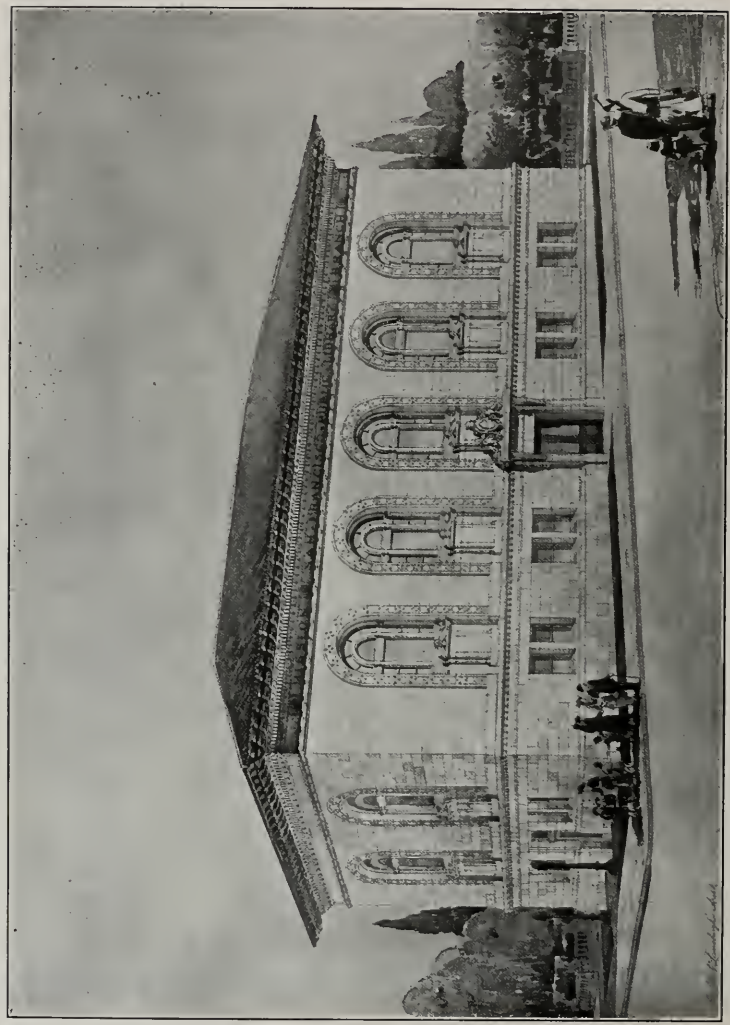
SKETCH FOR CLASS ROOM BUILDING, UNIVERSITY OF CALIFORNIA
John Galen Howard, Architect

SKETCH FOR NEW NORTH HALL, UNIVERSITY OF CALIFORNIA
John Galen Howard, Architect

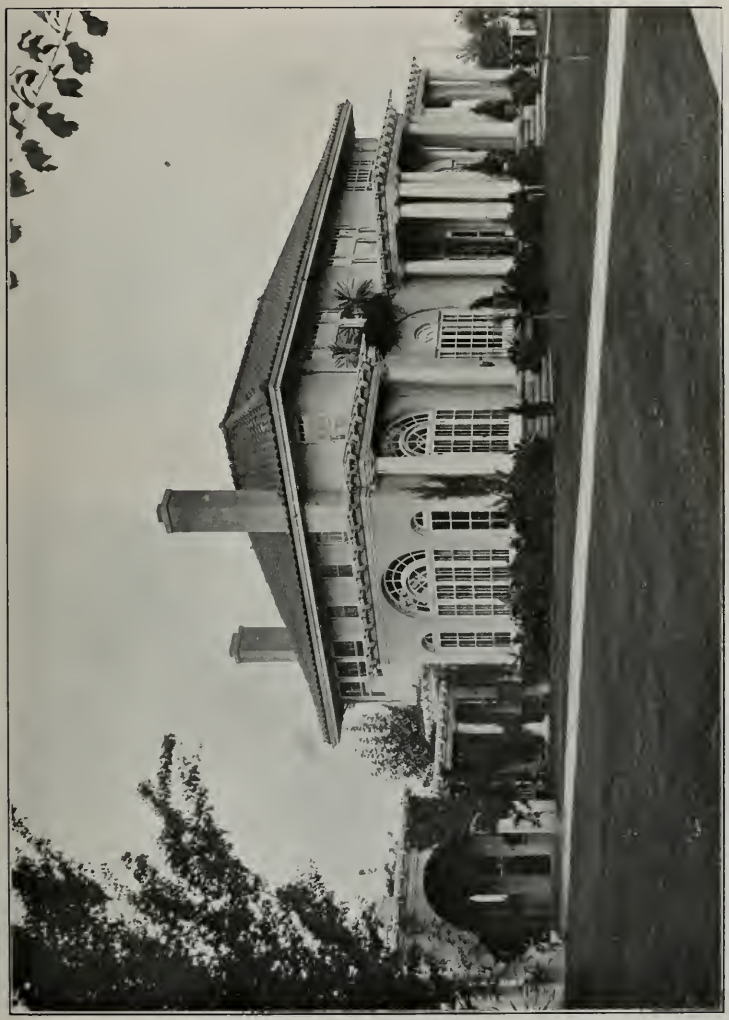
POWER HOUSE FOR UNION IRON WORKS, SAN FRANCISCO
CHARLES PETER WEEKS,
ARCHITECT



BURLINGAME CITY HALL, BURLINGAME
CHARLES PETER WEEKS, ARCHITECT



MISSION BRANCH, SAN FRANCISCO PUBLIC LIBRARY
G. ALBERT LANSBURGH, ARCHITECT



RESIDENCE, GEO. A. CRESSEY, MODESTO
BERNARD J. JOSEPH, ARCHITECT

DEPARTMENT OF ELECTRICITY, SAN FRANCISCO
Consulting Board of Architects

RESIDENCE, GEORGE M. MOTT, JR., CLAREMONT
Warren C. Perry, Architect

So much for prologue; and now let us see what this exhibition—the seventh one conducted by the San Francisco Architectural Club, and which was held in the D. N. & E. Walter building, San Francisco, June 7th to 20th—has to show us. This review will be made in rapid transit and must not be taken too seriously. Commencing at Alcove No. 1, near the elevator, we have the drawings and work of Willis Polk. The Water Temple is a thing of beauty of which we never tire. Perhaps it is because it is fancy free that the architect so well pleases us; however, the proportions appear admirable and the building fits in perfectly to the surrounding landscape.

The residence of Chas. T. Crocker is dignified and substantial, but the central porch appears overcrowded. If that which appears to us defective could have been suppressed, we would have had a very satisfactory building as regards this facade.

We cannot comment favorably on the Hobart office building. It is tall but scarcely beautiful.

The view of the River Station, Pacific Gas & Electric, is not a pleasing composition, but the Spanish Interior of a Court we would much like to see built.

The D. O. Mills Bank at Sacramento is one of Mr. Polk's most successful designs and is, we think, an architectural gem, correct in every sense of the word.

SECOND ALCOVE

Mr. C. W. Dickey's design for a residence in some thing of the Spanish style is "pas mal."

A loggia by Mr. B. J. S. Cahill is interesting and very pleasing, although not quite grammatical in composition, which is a little annoying, inasmuch as the defects could so easily be corrected.

The City Bureau of Architecture gives a fine aero view of the Civic Center, a difficult thing to render and excellently presented.

Messrs. Bliss & Faville show a design for stores for the Colony Holding Corporation at Atascadero. It is one of the best examples, illustrating how few motives, properly proportioned and assembled, can supply all that is necessary for a fine building. So all the great masters achieved their purpose.

A residence for Mr. Uhl by Albert Farr is very good; picturesque and interesting. I cannot make out the materials, but if in stone or brick and stone it should be worthy to endure and looks something like its prototypes in England, from whence the inspiration, no doubt, is drawn.

Mr. Jacobs presents a very interesting sketch for flats in the French Gothic style. Also a residence at West Clay Park from which the pergola roof garden might have been omitted to advantage, but it is good withal.

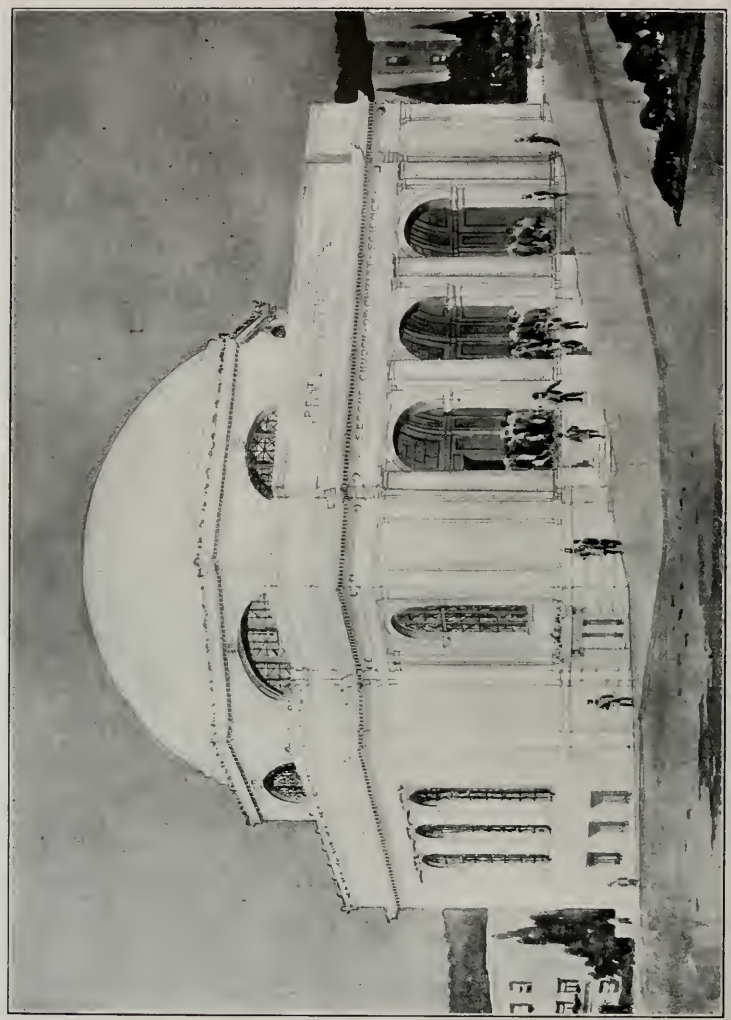
THIRD ALCOVE

An apartment house at 1899 California street, by Sylvain Schnaittacher is simple and pleasing. A residence by Edw. G. Bolles is worthy of note.

Henry C. Smith has a picturesque, simple and probably logical small school.

Willits Carnegie Library, by Tobias Bearwald is a substantial, dignified and appropriate design, although the two wings on each side of the central porch appear redundant to the design. The picture is excellently rendered, and does not deceive by excessive display of mere draughtsmanship.

An apartment house, Berkeley, is a type of building that will build well, not too much having been attempted in design. Ed. G. Garden is the architect. To attempt too much is one of the common sources of failure in all classes of design.



SECOND CHURCH OF CHRIST, SCIENTIST, SAN FRANCISCO
WM. H. CRIM, JR., ARCHITECT

SCHOOL AT SACRAMENTO, CALIFORNIA
FRANK T. SHEA and JOHN O. LOFQUIST, ARCHITECTS

FIRST PRESBYTERIAN CHURCH, OAKLAND
WILLIAM C. HAYS, ARCHITECT

FOURTH ALCOVE

Drawings by students of the University of California:

Pavilion in the style of Francois Premier by W. F. Graham is a splendid rendering of a very fascinating piece of good architecture.

Also An Orangery Under a Terrace by O. A. Deichmann of the San Francisco Architectural Club is a good design well rendered. An exceptionally clever sketch of a boat landing and river scene is shown by Carl I. Warnecke, Atelier Cromart, Paris. The only danger to guard against in examining such drawings is to avoid the pitfall of too much landscape and too little architecture; but here, I think, they balance evenly.

A memorial building, by Thos. Bendell, University of Pennsylvania, is a good design well presented.

FIFTH ALCOVE

The new class room building, University of California, John Galen Howard, architect, is beautifully rendered and well designed. Another drawing by the same architect—North Hall—might be reconsidered.

Collaborating with Cram, Goodhue & Ferguson, W. C. Hays shows an excellent perspective of a picturesque Gothic church and parsonage attached. The photographs adjacent show how an architect may fall short of his first intention, either through his own fault or through the restrictions set upon him by lack of funds or some other practical necessity. The finished product looks very well, but the ommission of embellishment at the gables' top, the reduction in height of portals, and the failure to carry out the detail of the parsonage as shown on the original drawing, all detract from the final result. However, it is a very excellent piece of work even as it is.

The A. B. Spreckels house by Kenneth MacDonald is gorgeous and massive, but withal not over pleasing in its somewhat stiff and aggressive attitude.

Mr. Lewis Hobart has a very fine design of the Vanderbilt residence—simple and dignified and very well presented.

By the same architect a study for a residence for C. C. Moore, Esq., appears a little jumbled, and the New Place, Hillsborough, though good, has two shallow porticos that might well be dismissed. The new home of the Fireman's Fund Insurance Company, by the same architect, is a very handsome and satisfactory building.

An apartment house, Berkeley, by W. H. Ratcliff, is rendered in a style that ought not to be encouraged; it is theatrical and very deceiving. Such renderings may make a bad design into a charming drawing, yet fail to show the qualities of a good design. This design by Mr. Ratcliff might be very good if one could see it.

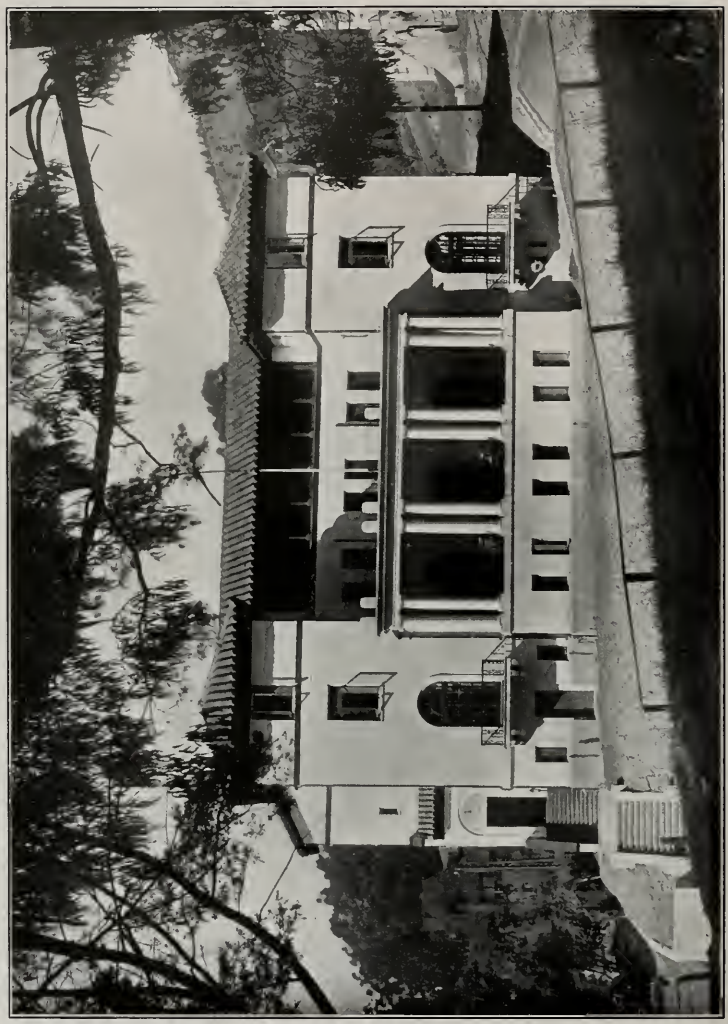
SIXTH ALCOVE

Flats by James Howson, show an entrance in very good taste. Small photo.

Eugene K. Martin has a clever sketch and appropriate design for a Christian Science church.

Smith O'Brien has a practical and sufficiently architectural building for the Sacred Heart at Los Gatos. The central dome, however, might to advantage be simplified.

Bakewell & Brown show the Polk street elevation of the San Francisco City Hall. It looks quite a little more pleasing than the executed work. With all due respect to the new City Hall, I must say that those first drawings gave me hopes that have not been quite fulfilled. This may be a misfortune that adheres to many good drawings.



PHI DELTA THETA CHAPTER HOUSE, BERKELEY
JOHN REID, JR., ARCHITECT

RIO VISTA GRAMMAR SCHOOL, RIO VISTA, CALIFORNIA
Henry C. Smith, Architect

SEQUOYAH COUNTRY CLUB, OAKLAND
Garden & Kuhn, Architects

CHRISTIAN SCIENCE CHURCH
EUGENE K. MARTIN, ARCHITECT

RESIDENCE FOR MRS. FATJO, SAN FRANCISCO
EDWARD G. BOLLES, ARCHITECT

Fred D. Boese has a robust and interesting building for the California Concordia College, Oakland. Free Renaissance or whatever you wish to call it, expressing the individuality of the architect; a little too turbulent, however.

In the Henry Kahn residence, by Chas. H. Miller, landscape effects have been badly overdone, overpowering the qualities that may or may not appertain to a not extraordinary building.

Edgar Mathews has an excellent drawing illustrating properly a good design for the Third Church of Christ, Scientist. It is void of unnecessary display of draughtsmanship and simply and clearly expressed.

It is a matter of regret that the Coast cities outside of San Francisco were not represented, and also that the work of a number of prominent San Francisco architects was conspicuous by its absence, showing an apparent lack of enthusiasm or co-operation on the part of the management and members of the profession as a whole.

New California Law for Creating City Planning Commissions

On May 20th, Governor Johnson signed Senator Carr's bill for the establishment, government and maintenance of city planning commissions in California. This bill is important as it will undoubtedly result in the formation of permanent city planning boards in most of the cities of the State within the next year. These boards are to have referred to them by the city council all matters relating to new subdivisions, the laying out, closing, or re-location of streets, the location of public buildings and parks, the zoning or districting of cities for the protection of industries and residences, the encouragement of better housing companies and the duty of advising the city council as to the future growth and development of the city.

The city council is authorized to levy a tax of two mills on the dollar of assessed valuation in the annual levy for the maintenance of the city planning commission, with which to prepare plans and reports from time to time, as well as to study out a permanent plan for future growth. While chiefly advisory in capacity these new boards can be a great power for increasing the health, comfort, convenience and attractiveness of our cities. Much will depend upon their personnel. Acting without pay, with terms of three to five years, it should be possible to get men to serve who would not ordinarily go into politics.

Great credit is due to the California Conference on City Planning and the League of California Municipalities, which have so earnestly worked for this legislation.

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June Meeting of Los Angeles Chaper, A. I. A.

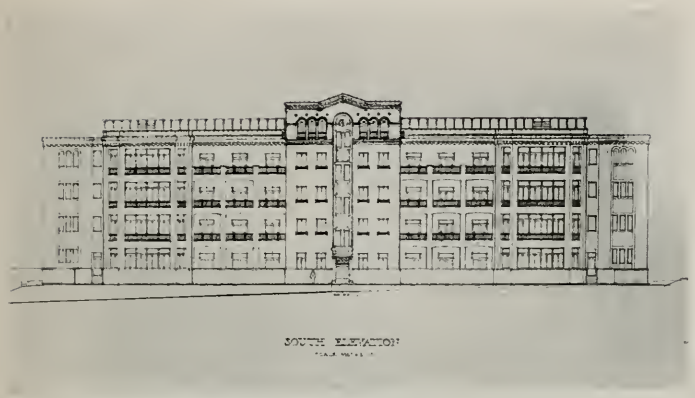
MR. ELMER GREY'S reminiscences of a bicycle trip through France twenty years ago and two subsequent trips in the same country furnished an enjoyable entertainment for the Southern California Chapter of the American Institute of Architects at its final meeting prior to the summer vacation. Mr. Grey's talk was illustrated by a large number of lantern slides showing photographs and sketches of various places which he visited. His first trip was with a party of twenty-two architects and draftsmen, some of whom have since attained prominence in the architectural profession.

Mr. Park M. French, of Denver, member of the Colorado State Board of Architecture, who was a guest of the chapter, told of the efforts of the architects of that state to secure an effective regulation of the practice of architecture. The law there requires the employment of licensed architects on all public and semi-public buildings three stories or more in height, but the law has recently been amended to bring buildings two stories and basement within the scope of its operation.

Mr. Charles H. Alden, of Seattle, Wash., was also a guest of the chapter. He spoke in high praise of the architecture of the San Diego exposition, which, he said, no architect should fail to see.

Mr. Winsor Soule, of Santa Barbara, recently elected a member of the chapter, was present.

Mr. Allison announced that the Governor had signed the bill repealing the law of 1872 requiring school trustees to advertise for plans for school buildings and that the repeal would become effective August 1st.



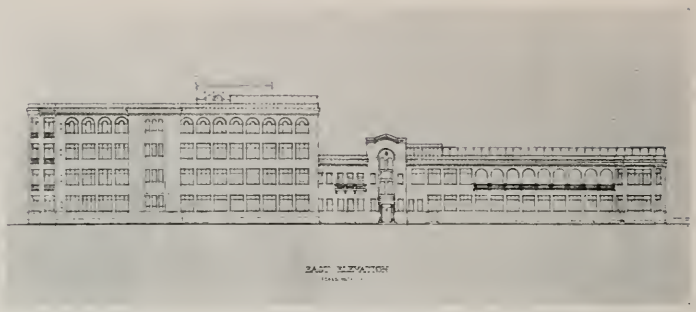
ELEVATION, ADDITIONAL WING TO SAN FRANCISCO CITY HOSPITAL
Herman Barth, Architect

Photos by R. J. Waters.

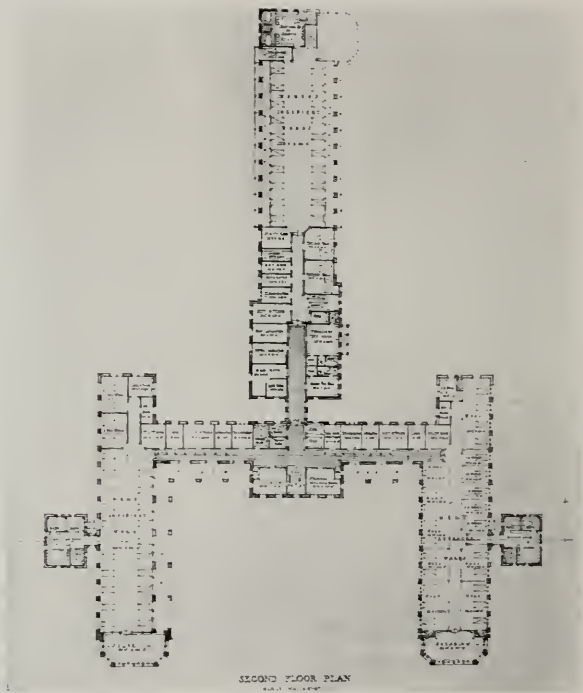
Herman Barth Wins San Francisco City Hospital Competition

THE competition for plans for building an additional wing to the San Francisco City and County Hospital, to be known as the Tubercular Ward, ended on June 8th, with the selection of the design of Architect Herman Barth, one of the seventeen competitors. The program for the competition was arranged by Messrs. John G. Howard, Frederick H. Meyer, and John Reid, Jr., comprising the Consulting Board of Architects of the City of San Francisco. The competing architects were invited by the board. The program stipulated that there should be but one prize, the winner to receive as compensation 6% of the total cost of the building, the amount to be expended being approximately $400,000. The work was executed in one-eighth inch scale lead pencil drawings and included a plan of each floor, a roof plan, section, and north, south, east and west elevations. The judges were Miss Julia Morgan, Charles S. Kaiser, and Dr. R. G. Broderick.

The winning design calls for a group of three buildings, one for the male incipient patients, one for the male advanced patients, and one for the female incipient and advanced patients. The first two buildings are to be four story structures, while the third will be two stories. The general architectural treatment of the successful plan is in harmony with the hospital buildings already constructed, the style being an adaptation of Italian Renaissance. In working out his plan Mr. Barth endeavored to carry out the requirements of the program in every particular, and that he succeeded is shown by the fact that his design won the first prize. This will be the third hospital designed by Mr. Barth. He was the architect of the German Hospital in San Francisco, and also the Alameda Hospital.



ELEVATION, ADDITIONAL WING TO SAN FRANCISCO CITY HOSPITAL
Herman Barth, Architect



SECOND FLOOR PLAN, ADDITION TO SAN FRANCISCO CITY HOSPITAL
Herman Barth, Architect

Art and Its Relation to Architectural Practice*

By FRANK L. BAKER, A. I. A., Seattle, Wash.

THE theory of the architect, I think, is a science. The practice, I believe, may be an art. Theory and practice train hand in hand through all the architect's work. Science precedes the art from start to finish. The idea first, ideal second, then the reality, the culmination of practice. Theory and practice bend over the drafting board and together drive the saw and plane. It seems to me it should be the aim of every architect to attain to a theory containing more truth in principles, and a practice more nearly approaching perfection in art.

A definition of Art may be proper here, since the purpose of this paper is to disclose the function of art and its relation to architectural practice.

We should distinguish between works of art and art the cause.

We agree that works are produced by art, but we are not always clear in our segregation of the elements involved in the labor of production. In this labor we have, first Labor of spirit, in which is vaguely involved our ideas of art intuition, aspiration and instinct; but none of these terms are sufficiently conclusive or accurate. Art labor is by inspiration and is the causative spirit actuating our intuition, aspiration and instinct.

Second: We have the vehicle of the art labor which is the mind or brain and in this also are involved intuition, aspiration and instinct produced by reason of sub-conscious brain activity.

Art is the causative, cosmic, compelling and coercive force which coordinates, harmonizes and unifies activity of mind, to the end that there shall be evolved out of chaos, symmetrical development of our master powers, our control over and identification with the cosmic factors.

Consciousness is the sole judge and is our assurance of art in practice. We may have conscious mental activity, intuition, aspiration and instinct, and yet not have consciousness of active art inspiration. Our consciousness here is of a conception of art quality. Consciousness of the organic formation of a conception of art quality is due to the participation of the spirit of Art in the labor of conception.

Often the architect's failures are due to his inability to retain intimate relations with the project in the office and on the works. His head and hands are not continuously identified with the working out of his conception. He has not truly been architect.

In the beginning the project is stated by the owner in his own more or less intelligent way. It is taken into the mind of the architect and restated in terms of architectural science. The essence of knowledge and ability he possesses and has acquired by reason of original powers, cultivation and concentration in their use are brought to bear on the subject. The cumulative result is the theory of the work, the conception of the design and execution. In this he is the scientist. He is concerned with the working of exact mental processes which form the basis on which the craftsman executes the work—the concrete, tangible thing, of structure and function, fitted to purpose, and with qualities accusative of the personal service exercised in its production. The peculiar union, in the building, of heart, head and hand of the architect, forced into his life, gives rise to processes, on the part of the interested spectator, which carry him to judgment, appreciation, and desire to comprehend and practice—live himself the life of creative effort, culminating in performance of approved value to all people.

* Paper read before the Washington State Chapter, A. I. A.

And where does the beautiful come in? Is the architect, then, not concerned with the beautiful, the bloom of his carefully reared plant, solicitous at all times that no blight or accident befall his work? Is he to labor blindly toward a goal which only appears when the object is unveiled to the light and freed from care of tender hands, thrust out into the world to stand or fall, dependent on itself alone?

Many are taught in these days that the purpose of the architect, using theory and practice, in design, is to effect the execution of, what may be called, a certain recognized and approved art quality in his work. His conception of this quality is reached at a certain stage in his work and this conception is often regarded as an inspiration. In point of fact, the free and errant elemental forces, working at odds within him, at some time combine and precipitate the conception. From this time of premature conception, on to complete execution, the head and hand are no longer master; they have been deposed by the vagrant knights, and what was started in freedom, ends in slavery.

The theory of architecture is made up of minor conceptions leading up to the major, which embraces the whole.

The preconception of a finished structure with specific qualities of beauty and harmony is a very different thing from cumulating conceptions growing out of theory and practice. There is as much difference between the two as there is between the growth of plants; one of which has been transplanted grown, because it allures and holds the imagination, promising certain fruit and bloom. The other is raised from seed, and the seed is not selected, it is given. The architect is the gardener and he neither knows nor cares what terms will be applied to the ultimate flower. The plant is grown in the soil and atmosphere of the architect and through his creative life, will it reach maturity and bear fruit. Even if we consider Art the Flower of Architecture we may still be convinced that art is created by cumulative efforts, with sanity, the vision of a seer, and the hand of an adept. It is not haphazard, hit or miss, even if free to the last. Freedom is inherent because the growth is not by compulsion, but by fertilization, by the giving up to it, the essentials which the creative, constructive faculties —in man—determine necessary. We do not then, create this thing, so much as we allow it to build itself within us. It is no adopted child, but the germ is in us, grows in us. It is ours. It is of us, personal to us, even to the concrete form and body.

When the client comes in what then are we to do toward the creation of the work of art in architecture? Are we to look about us, allow imagination free scope to range over the works of the past, and when the roving dove has settled on some mountain peak, say to ourselves: "There on this head, which rises above the submerged host of constructed work, shall our ark rest, and there shall we build our temple." Or shall we rather consider the seed fallen on fertile ground and in the plentitude of our strength cause it to germinate, sprout and unfold itself under the warmth and light of the ambient sun?

The architect, when a commission is given him, may revel in the thought that "now, here is my chance to use my skill, my knowledge, training and taste." He may take down his ponderous tomes and ransack the remains of ancient and modern times, with one eye open to keep clear of the stamping ground of fellow practitioners, then settling on his type or his copy, after long consideration of appropriateness, adaptability and possibilities, proceed to make out of the poor helpless germ handed him, some monument, to himself, I suppose—hardly to the owner, and certainly not to the public.

He labors with his architecture, of course the engineers take care of structure, heat, artificial light, and plumbing. He is preoccupied with the vast problems his imagination, floating among the shadows of lofty conceptions, bears back to the weary, but none the less enthusiastic architect. He is above all things enthusiastic, full of ginger, and his work must be done with snap, vigor, show the scholarly master-mind, and adept craftsman. He is our architect of today, spry, up to date, businesslike, mushroom conception, then sketches, working drawings, contracts, and before we realize it, the building!

Fall into the ranks, all you faint-hearted ones, brace up and keep step!

Or, on the other hand, he may look doubtfully at the client, wondering a trifle, perhaps, why he should be chosen, not being of the horde of those who have achieved greatness, and not having expressed even a slight desire to distinguish himself.

However, the client has selected the poor man and so he must collect himself and look able to sit up and take a little nourishment. He takes his problem up tenderly. Who knows what potent life may lie static in this plastic pulp. Presently the spring of life starts flowing, and then the obscure hired man has head and hands absorbed in a struggle to feed the maw of this growing thing, as yet undefined, unformed. No need he to consult antique books or modern precedent; for in the man is the origin of his works. Head and hands are one; thought and action are coincident. He has books, he has brains, he has experience, but more, he has freedom. He has passed the Appian Way along, and its strewn monuments are in the old life of finished labor, the life of the vessel into which was poured the acts of past experience, and now he pours and pours, from the flowing cup.

The project is his, structure, form and function. He builds with confidence, swiftly, surely, directly. The structure is his, grace and beauty, curve, contour, and color. The function is his, intention and movement, purpose and expression. His supports carry; his rooms inclose, environ and his corridors lead, his windows light, and his heat radiates; and then all is done, his work is created, his, made of the vital truth, to stand in the name of humanity, architecture, work of a master builder.

But where is art? Have we lost her? By what sign shall we know Art? Our Queen, perforce! Does she loudly proclaim her presence like a wanton—the haunting vampire of an architect? Knowingly we have had practice, and if that is art, we have art.

The so-called language of art is not, like the language of human speech, made up of words and phrases, only in the shape of mouldings and orders which may be defined, classified, pigeon-holed in their niches on the structure, to be pulled out, read and comprehended, as Mr. Reginald Bloomfield seems to think.

The language of art is from the fresh breath of the new-born, new-grown, emanated from the unknown, and is comprehended only by the initiate. It is an emanation from the universal spirit of art and is answered through the coalescence of the spirit of art in us with the universal all-inspiring spirit. We think to superinduce this coalescence of art spirit by methods and means, schools and teachers, and words descriptive or instructive, and taken into the foundation soil of our nature they do form the river-bed, the channel through which flows the stream of artistic impulses, but let us not confound the impulse with the object propelled—art executed; nor does it follow that we always irrigate our souls with the spiritual stream of creative impulses. The river bed is broad and deep, but is often dry or clogged with the crowding debris of dissolution. Unused, the castle

moat fills up and the barbarian architect, scaling the city walls, brings desolation; and from atrophy, somnolence and delusive content, raises up anarchy and the fright of masquerading spectres, torn from their urns, and prancing to the whip of the pseudo architect.

To see our Queen we must keep the stream of creative impulse flowing. We must open up the sluice gates and let the water of life irrigate our fields, turn our faces toward the illumined dawn, and our Queen shall rise over the horizon, a vision undraped, illusive and glorified.

Art lies in the motive, the springs of action. Art, we say, is indigenous, in a general sense, to the different localities and countries. Thus the art of Japan is indigenous to that country, but may be practiced elsewhere. What really is the case, is that a spirit passing through the medium of the Japanese, produces certain definable outward effects which, apart from that spirit, in their production, are purely superficial and pretentious. Art in workmanship animates it. Its spirit vitalizes. The sculpture and painting of art are animated by the same vivifying spirit as architecture. The consciousness, which is born of the coalescence of the spirit growing in us with the fountain spirit from whence it is derived, authorizes the collaboration of art, and is evidence of its existence, sympathetic, harmonic; pulsating through our spirits, whereby our impulse is to impart to our works, harmonic, imperishable forms of fitness and beauty. There is only one art in architecture, albeit a thousand so-called or false arts. There is only one spirit of art in practice. Art is not taught. It is a spirit, contagious. It fascinates. It is not the refinement of culture, of head and hand—that selective faculty, trained to nicely adjust the component parts of a composition in such a way as to visualize a mental picture of a structure, its function and material aspect.

Criticism of art and architecture is generally couched in terms based on the theory that all things are but materializations of ideas. Art is not an idea, and cannot be materialized. It is a paramount condition—not a quantitative condition of adjustment of relations, but the actuating condition of quality that attaches to, and exists originally in works, but persists to some extent in their reproduction and reconstruction. The broken column may serve a second duty with half a smile, its glory tarnished, unseated, a grimace distorts its visage. "What, art truly!" may it exclaim, "tore me from my native place and forced me here to stand, an alien, to prop a mountebank monument. Where are the recreant fools, traitors to the cause who belong here, and what am I, to be thus set up to scorn, a reproach."

Through all the world and in all its ages the vandal architect, primed with the plausible precepts of the schools, peeks into the archives of architecture, and slyly, here and there, appropriates from the sanctity of "Poets' corner" some tidbit morsel, some effulgence from the superman and sets it down to grace his chattel work of art. Work of art, forsooth! I am trying to detach from mental works, the immortal laborer in conception and make clear that art is an essential force, that subsists only in the conceiving, and cannot be recalled to action except through the original impetus.

Labor once done is finished. The Greek or Roman architect sent his aspiration into the realm of spirit to return poignant with the pregnant impulse of labor and labor following, produced the works crowned with the halo of art.

It is idle to say that we too may project our aspiration into the tense ether of the art spirit, to come back in labor potent to create the greater, truer work. The Greek or Roman, or Gothic art is lost, unique in the works.

If works animated art, instead of art animating works, we might, with some show of success, resurrect the art of other times and, hitching our skill in imitation and production to the tail of our kiting period, send it flying into the far recesses of the upper air. But we incontinently build, tear down and rebuild, until the primitive in us fails to discern the welding line of the antique art and modern skill, here in the dim borderland of easy sophistry sleeps, uneasily, the recumbent spirit of our art.

If this were not the age of strife that sends men back to principles, all this would be immaterial; but we are growing into the age of light. Our eyes shall be unshaded. The curtain that screens, the drape that fear and superstitition has thrown over the form of truth shall be cast aside. The people throughout the world are struggling for freedom and they are gaining it. They will be strong to bear the truth, even if it blasts the crust of social conventions and the dominance of exploited falsehoods. The architect may follow easily the path broken by others in building and in business, but the domain of art is like a "Paradise valley," high up on the mountains, under and within the realm of one greater. The flowering field is untraversed except by one road. One may sojourn therein a while, go, and others come. Those who go up to the valley are pilgrims at the shrine. They may go once, or often. They labor for men-freedom of men from encrusting, deadening materialism. They labor for art-freedom of art from man-made fetters, the mould fashioned by the finite to hold the infinite.

And how shall we secure power in us to draw and carry from the spring, the elixir of art—libation from the gods on works of man, to animate with vital force our wood and stone, the material substances out of which we construct our buildings, our sculpture and paintings? The answer is that we shall secure such power of impulse through life, the life of the original. We must take into our system the life and spirit of the original works. Reconceive them, try to vivify the life of spirit, the animating principle of the are which produced these works. When we have work to do we must labor in consonance with the Masters. Strive to be of them. Imbibe from the reservoir of the ages, energizing spiritual stimulus, to quicken our faltering steps. Strive to culminate coalescence of the basis of artistic talent in us with the basis of art in all ages.

We shall not be entirely free. We shall fail to attain the active, vitalizing motive. We shall copy the executed works, and lose ourselves in the concrete substance and forms. We shall imagine that in reproducing forms and manners we are using the same spirit which animated the originals, but we shall gain some headway, some force of conception and craftsmanship, some ability to stand alone, great enough in spirit to conceive and execute works of art in architecture.

Is this spirit of art purely a figment of the imagination? Is it a pleasant excursion of the mind into the mystic realms behind the screen of exact, recorded human knowledge and experience? Is this spirit merely a name, given to the certain activities of the brain which, producing a visible effect, that, foreseen or not, the conscious mind appreciates as a peculiar attribute of works, and the philosopher straight-away proceeds to label as art? Or, is this spirit really fundamental, innate in mental activity as a laborer, an inspirer?

Man in action, is largely an automaton, a transformer into which is passed the incoherent fluids of matter, and the products of which, are matter transformed into intelligible coherent works.

Some years ago I read in one of Maeterlinck's essays the statement of a view that appealed strongly to my conception of things. It was to the effect

that man is a spectator, interested of course, of the process of growth and decay. He watches the fires of life transform the crude ore into finest gold. Impassive, he stands in the throes of convulsive forces and in the light of glowing flames he sees the rise and fall of human works. The furnace fires burn bright or dim as fuel and combustive liberty invite, and in the fire is the fine gold separated from the dross, the unworthy consumed with the false. One by one the useless tricks and trappings of mortal man drop off until finished, suffused with glory, tried by fire, pure gold rests free, immutable.

So are the architects tried in their works. The art spirit, fanning upon the torch, kindles into flame the disordered upgrowth of primal ages, to the end that there shall appear clear, defined and unalterable, works of art; and out of this fire, consciousness will arise free from mortal works and bias; poised in judgment, absolute.

Unless the mind has power in itself, is both the force in fact, as well as the vehicle, then we must predicate generative forces outside the brain, which polarize and enforce creative action or art. My thesis is based on, and I believe that the art in me induces this conception, that art exists in the action, is not the work nor the quality of the work, but is the vital actuating element of spirit which produces quality of work.

* * *

Architectural Acoustics

IN order to determine the acoustic properties of a building it is no longer necessary to wait until the auditorium is finished and then endeavor to ascertain whether it is good or ill, says Dr. Wallace C. Sabine, Dean of Graduate School of Applied Science of Harvard University, in an article which appeared in the Journal of the Franklin Institute. While the factors of the acoustic problems in an auditorium at all complicated, are themselves complicated, nevertheless they are capable of exact solution or at least of a solution as accurate as are the architect's plans in actual construction. This conclusion is given as the result of experiments extending over a period of ten years and begun in some of the buildings at Harvard.

The question of reverberation of sound was first studied. The principal point there is the absorption of the sound, that is, its transformation into another form of energy. It was found that cushions placed in the seats materially diminished the reverberation and further experiments in absorption showed that the audience itself and heavy hangings three or four inches from the wall were the best absorbers of sound. It was discovered that wood sheathing was a better absorber than plaster, glass or brick.

While materials are the principal feature in reverberation, faults in which can consequently be corrected with comparative ease in an auditorium already built, the shape of the room itself is the best factor in interference—the conflict in sound waves reflected from projecting surfaces, which sometimes continue a sound unduly, sometimes make an echo and sometimes either directly conflict or directly augment each other so as to double or annihilate a sound. Hence the so-called "loud regions" or "deaf regions" in an auditorium. From the experiments, experts in acoustics can now determine by an inspection of the plans of an auditorium whether or not it will be possible to hear well in it, and if not just what should be done to improve it.

* * *

Contractor—No; we have all the men we need.

Laborer—Seems like you could take one more, the little bit of work I'd do.

Why Bad Housing Costs and Better Housing Pays*

From a report on "Better Housing in California" by LEWIS P. HOBART and CHAS. H. CHENEY, to the Commission of Immigration and Housing of California, 1915.

I. Existing Bad Housing Conditions in California

BAD housing is a universal problem, affecting practically every city in the world. Overcrowded tenements, insanitary congestion and general slum conditions exist already in many of California's fast growing cities. Unless immediate plans are made, the flood of immigrants through the Panama Canal after the war, will create conditions as serious as those in New York, Boston, and elsewhere. California should have no slums or bad housing whatever.

Yet San Francisco, Oakland, Los Angeles, San Diego, Fresno, Sacramento and other smaller cities already have bad conditions to alleviate—but above all it is important for them to plan ahead to insure proper housing in the future. Nowhere in the world has the problem been solved by private initiative of land owners and builders. In California, as elsewhere, the State and city governments must co-operate for betterment.

Bad housing is associated with the worst community evils: with infant mortality, juvenile delinquency, the social evil, the development of criminals, the spread of tuberculosis and typhoid, and frequent epidemics of other contagious diseases. Communities must act in self-protection. Better housing pays.

New Jersey has a tenement law that effectively prevents housing evils. Massachusetts now makes mandatory upon all cities and towns the establishment of Planning Boards. California needs both new laws and Planning Boards. It needs help to get them.

The Contrast.—On Telegraph Hill in San Francisco, where the largest and most congested groups of tenement houses in California exist, there is one building built of wood, six stories high in the rear, housing 99 families, without a single bath, at an average rent of $3.00 per room per month. This building is a menace to the health, safety and good citizenship of all those who live in it, and a bad temptation to the exploiters of the poor, who might attempt to duplicate it.

Contrast with this the group houses built by the Woodlawn Company in Wilmington, Delaware, where four to eight rooms rent for from $10.00 to $16.50 per month, or at an average of about $2.50 per room per month. These houses are nicely built of brick in rows, two stories high, the smaller ones in upper and lower flats. They all have sanitary conveniences. While the land occupied by these houses is somewhat cheaper, and the rents are low because the company limits its profits to a small return on the investment, similar buildings could undoubtedly be built in California to produce a reasonable rate of rent even in Telegraph Hill district.

There can be no question as to the better citizenship, health and usefulness of families living in conditions such as those at Wilmington. Two-story houses in rows produce more for the community than tenements. Why does the city not encourage small houses more and discourage tenements?

Another bad condition common in many cities in California are the old garages, outhouses, etc., converted into lodging houses for laborers and

* The subject heads and topics discussed in this portion of the report are the same as the panel headings in the Better Housing Exhibit, which shows photographic illustrations of most of the housing schemes mentioned, both good and bad, in contrast. The Exhibit has been shown during the past spring by the commission in San Francisco, Oakland, Los Angeles, and Sacramento, and is now in the Education Building at the Panama-Pacific Exposition.

THIS EXHIBIT SHOWS
BAD HOUSING
GOOD HOUSING
Tenement in San Francisco.
Better Housing for workers in Wilmington. Del. Built on ground by Woodlawn Corporation (not for profit)
4-Rooms and Bath. $10.00 per month.
Garage turned into Lodging House, Sacramento. 18 beds or bunks here.
Simple Cabin in Modern Sanitary Room and Lodging House (10¢ a night)
"Homes" in Los Angeles
Sensibly planned Low priced Homes
and that
- BETTER HOUSING PAYS.
- THERE ARE PRACTICAL WAYS TO OBTAIN BETTER HOUSING NOW.
WE WANT YOU TO REALIZE HOW BAD CONDITIONS ARE
IN CALIFORNIA AND HOW YOU CAN MAKE THEM BETTER.

One of the thirty-six panels in the "Better Housing Exhibit" prepared for the Commission of Immigration and Housing of California by Lewis P. Hobart and Charles H. Cheney.

others at 10 cents or more a night. The Commission of Immigration and Housing found in Sacramento an old garage the ventilation of which was a single door and transom, converted into a bunk house with eighteen beds in two tiers.

These are the breeding places of disease and the community should not tolerate them. At 10 cents a night it is possible to build a lodging house with cubicles or small individual sleeping rooms each with a window, perfectly sanitary and wholesome, that will pay a good return upon the investment. Modern municipal lodging houses, and particularly the Mills Hotels in New York, have proven this.

Back of Telegraph Hill in San Francisco, not in tenement houses but in groups of small insanitary shacks, some of which have no windows, with toilets ventilating into the one room or the kitchen, there were in January, 1915, 85 cases of diptheria,* and there is no general state law requiring even a window properly ventilating toilets or any minimum sanitary provision for such single family houses and flats in California. We regulate more than three families in a tenement house, and Los Angeles stretches this law to cover three or more houses on the same lot in a house court, but there is as yet no way that any one can go in and insist that the conditions which breed diseases in these houses should be made right, or to prevent similar conditions from arising in the future. Los Angeles has a similar district of shacks and small houses along the river, and in every city in California, particularly where there are alleys, such houses are to be found. We must not discourage the building of homes of the humblest sort by mechanics and working people, but there must be a minimum sanitary requirement of light and air under which they should not be allowed to build, for their own sakes and for the sake of the community.

The difficulty is that building contractors in California, and the public in general, give very little attention to furnishing homes for the worker who can only pay from $8 to $20 per month in rent or to purchase.

Contrast with this the group houses now being built in England, where they rent four to seven rooms for from $6 to $12 per month. These houses cannot be built as cheaply in California. Recent architects' estimates are that they would cost nearly double here. But in what city in California is it possible to get four to seven rooms at even $12 to $24 per month, or $3 per room per month, except in the cheapest kind of wooden tenements or in deteriorated districts in houses that are in bad repair and generally insanitary? We have bad conditions but they can be made better. Houses should be built here to rent from $8 to $20 per month, as good as those in England. We must make it somebody's business in each city to collect the facts and show owners and builders how to make a return on the investment, either with group houses or other schemes that make for the real citizenship and healthy conditions of the tenants.

Tenements.—There are approximately 5,000 tenements in San Francisco and 1,500 in Los Angeles and the conditions in many of these tenement houses are very bad indeed, as the Commission has found. Tenements are increasing in California. A survey of housing conditions in Sacramento showed eight people occupying one basement bedroom, and on Telegraph Hill in San Francisco many cases of four, five, six, eight and even ten people in one room. In Sacramento the basement dwellings seemed to be the worst. Twenty-three unventilated bedrooms were found in one basement.

Immigrants largely live in these tenements. Immigrants are only

* The records of the San Francisco Board of Health show, July, 1914, 7 cases; August, 5 cases; September, 49 cases; October, 24 cases; November, 51 cases, and December, 85 cases. Besides the menace of contagion, this epidemic entails considerable expense to the community.

allowed to enter this country who are able bodied, full of brawn, and eager for citizenship and work. They will soon be pouring into this State as they have into Atlantic States. Every California city should plan now to discourage tenements and encourage wholesome homes for these future citizens.*

Congestion.—California cities are beginning to suffer badly from both land congestion, or the placing of buildings to cover too large a proportion of the lot, and from room congestion in the buildings.** It seems incredible that eight and ten people, one or more of whom may have tuberculosis, or some similar disease, will crowd into a bedroom ten feet square, and yet this Commission and other investigators have found many such cases, some of which are cited in the exhibit. Very often these cases are in tenement houses where the existing law permits the health officer to go in and insist on every sleeping room having 500 cubic feet of air for each person. Ten people in one room absorbing tuberculosis, or other disease, from one or more of their own number and spreading it in the community, are as much a menace, if this room happens to be in a one or two-room house, as they are in a tenement house.

In this connection it must be recalled that our health is not determined by the care which we take of ourselves, but upon the care which our most impoverished or most careless neighbors take of themselves. The menace in room congestion must be recognized and dealt with promptly.

Land congestion is a serious problem to every city.*** In California's young communities there is little excuse for it. Only lack of foresight has permitted such a tenement district as that on Telegraph Hill in San Francisco. Of 280 tenement houses inspected by the San Francisco Housing Association, 132 (47%) had no yard space. In the same district of 219 lots examined, 36 were completely covered by buildings; 159, or 72%, were covered to over 80% of their area. While these buildings were built before the present Tenement House Law went into effect in 1909, they are still a menace to the health of the city, and active means must be employed to get rid of them as soon as possible.****

California is largely an agricultural state, yet the census of 1910 shows that 56% of the population is concentrated in cities of over 5,000. In 1880 only 40% of the people lived in cities.

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* There is steady growth of immigration to California. From 8,000 in 1899 it has increased to 32,000 in 1910. That the increase will continue is undoubtedly true, complicated though the question as to the actual number may be, by the opening of the canal and by the European war.

** "Whatever increase in the number of deaths arises from congestion of population, or from the adverse conditions that accompany congestion, is utterly needless, and reflects upon our intelligence and our respect for moral obligations. Congestion of population is, of course, not solely responsible for excessive infant mortality: there are many factors in the problem, but over-crowding on land and of people in tenements is the most fundamental, far-reaching and deadly."—From 1st Annual Rep. Mass. Homestead Comm., 1913, page 57.

*** Unregulated industries mean bad housing. One chief cause of congestion of population is congestion of factories and shops. Workers must live near their shops if hours are long and wages low.

A study of 10,000 workers in New York shows:

(1) The longer the hours the nearer the workers live to the factory.
(2) The lower the wage, the nearer the workers live to the factory.
(3) The more recent immigrants live nearer their factories.
(4) Women workers live nearer their factories than men workers.

The larger California cities can already see these conditions beginning to exist and are not planning ahead to meet them.

**** The San Francisco Housing Association informs us that nearly all of the tenement houses on Telegraph Hill are built on ten-year land leases which expire in 1916, '17, and '18. Here is a great opportunity for San Francisco to study out the best type of housing for this district and to secure the co-operation of land owners to put it into effect.

For further data on tenement conditions in San Francisco, see reports of the San Francisco Housing Association.

Again, the large cities are increasing much faster than the small ones. In other words, congestion is tending daily to grow worse.*

Congestion is producing new civic problems all over the world, but as these problems are only from 25 to 50 years old our cities are only now beginning to awake to the importance and the possibility of preventing them.

A Minimum Standard.—There is a minimum standard of habitation which must be defined by law. The State and municipalities cannot in self-protection permit living conditions which are a menace to the health, morals and comfort of the whole community. What this standard is must be determined carefully, and more carefully enforced.**

The present Tenement House Act attempts to define the minimum standard where more than three families live in one house, but as has already been shown above, it is just as essential to prohibit disease breeding conditions in one and two-family houses, flats, etc., as in tenement houses. The present Tenement House Law is also very vague, ambiguous, and easy to evade before the courts as present written. It should be amended, not to make conditions more severe for building, but simply to cover and protect the honest builders.

Bad conditions exist at the back doors of our best residential districts. The trouble is that it is nobody's business to look after them at present. For example, in Pasadena was found the worst case of overcrowding yet recorded—nineteen people living in one room. Again, in Sacramento, 12 shacks made of tin patch work, on one lot, were found renting one-room apartments that were absolutely insanitary.

Cities cannot afford to let people live like this: it costs too much in disease, in mortality, crime, and general bad citizenship. The whole community is endangered as long as a single family lives this way. In self defense, every city must enforce and the state must require this minimum sanitary standard below which no house can be allowed to be built or to exist.

Unlivable Homes.—Modern sanitation has taught us that flies in warm climates are the worst carriers of disease, yet when the Commission found stable yards which breed flies adjoining apartment houses, with sick children, there was no law in Sacramento to abate nuisance. Again in Sacramento, beds were found over stalls in stables; nine bedrooms in an underground cellar lodging house had no ventilation and no light; kitchens, plenty of them, with toilets in them, and without outside ventilation.

In ratio to population many more people die from tuberculosis in the larger cities. Why?

Permitting such conditions is a municipal crime that regulation and planning ahead can prevent.

Despite the few badly congested tenement districts already noted, most California cities are largely made up of single detached houses, and the

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* Investigation shows:

(1) The rural population of California, including the population of towns with less than 5,000, has decreased from 60 per cent of the total in 1880 to 44 per cent in 1910. The decrease in the last ten years, from 1900 to 1910, is equal to that of the previous twenty years.

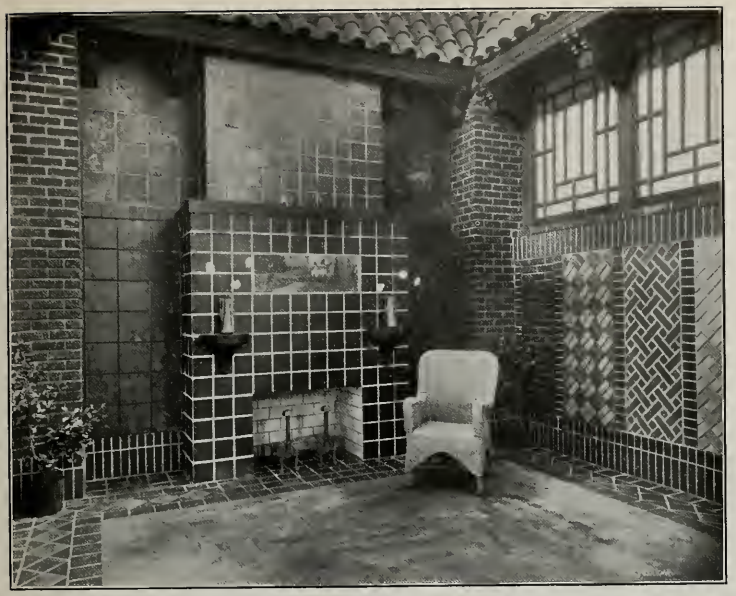
(2) The population of cities with over 100,000 inhabitants has increased from 27 per cent of the total in 1880 to 37.3 per cent in 1910. From 1890 the increase has been marked. The percentage of people in large cities has increased much faster than that in the smaller cities.

** The establishment of such a minimum standard of living has brought out the fact that in every big city there are a large number of families, either temporarily or permanently without an income sufficient to pay the rental of a minimum standard house. What is to be done with these unfortunates? The law cannot leave them to congest and become an added menace to the community. Careful study must be given to planning ahead by each municipality of the state to provide for these people, and also to plan ahead to encourage and make possible the proper housing of the working people at a rental they can pay, and within reach of their employment. The haphazard and wasteful lack of forethought in our cities is undoubtedly responsible for tenements, slums and congestion of population.

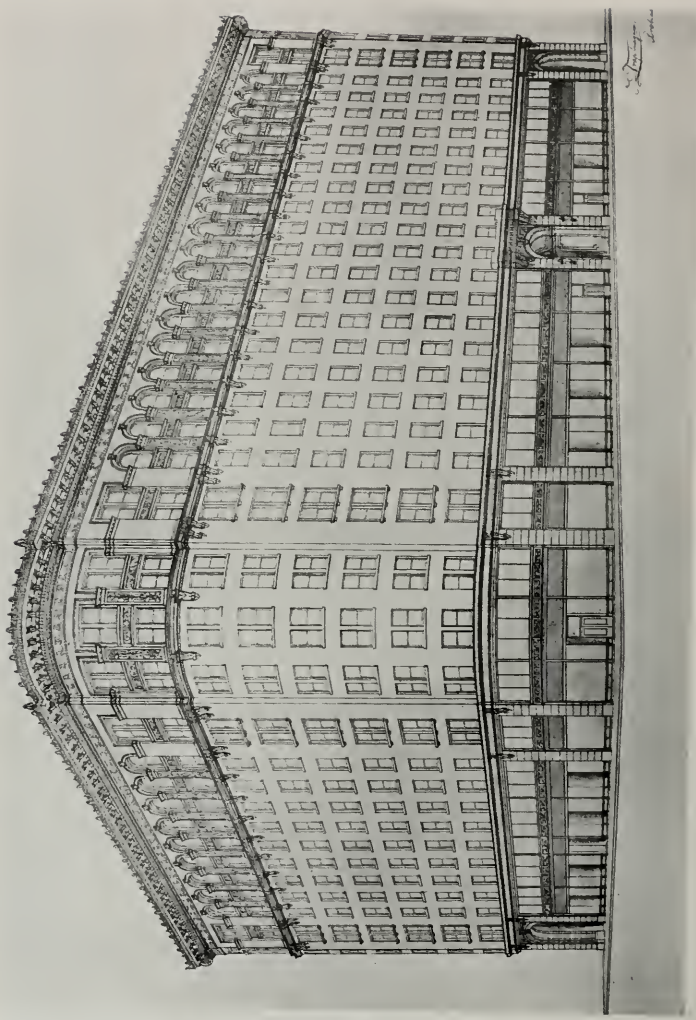
The Commission should, during the next two years, start constructive thought and action along this line for better housing in California.

small house is the real problem of the State. If proper action were taken to seeing that no insanitary small houses were erected, present bad conditions would gradually eliminate themselves, or could be handled with reasonable expenditure and difficulty. We need regulation for all dwellings now. No air and no light, because there is no regulation, only emphasizes the fact that darkness breeds disease in single houses as well as in tenements. The negligent owner's retort now is always, "There ain't no law about dwellings, so what are you going to do about it?

EXHIBIT OF THE LOS ANGELES PRESSED BRICK COMPANY IN THE PALACE OF VARIED INDUSTRIES, PANAMA-PACIFIC EXPOSITION



TWO VIEWS SHOWING THE VARIOUS KINDS OF BRICK AND TILE MANUFACTURED BY THE LOS ANGELES PRESSED BRICK COMPANY PALACE OF VARIED INDUSTRIES, PANAMA-PACIFIC EXPOSITION



PROPOSED OFFICE BUILDING FOR THE SOUTHERN PACIFIC COMPANY, OAKLAND
O. G. TRAPHAGEN, ARCHITECT

The Fair — Octavius Morgan's Impressions of It

Mr. Morgan is senior member of the firm of Morgan, Walls & Morgan of Los Angeles. It was while attending a joint meeting of the Southern and Northern California State Boards of Architecture, of which he is a member, that Mr. Morgan visited the San Francisco Exposition. Upon returning home he gave vent to his enthusiasm as follows:—

I HAD a glorious trip, and climate conditions were ideal. Was there five days and apparently for my benefit the climate and sunshine of Los Angeles had been transferred to San Francisco. The sun shone continuously, yet the air was such that one could stand exercise without fatigue. You know the Exposition site is so sheltered that any breezes there may be in the city are cut off—a wonderful choice of location.

The layout of the buildings is on such a scale that their immensity is only grasped by the distance one has to travel. I made extensive use of the auto trail cars and electric basket carriages, and the first day I was enabled to get a grasp of the situation. Truly, it is a wonderful combination.

The Machinery Building is a wonder, both interior and exterior. The group of eight buildings, with the varied exhibits, is a revelation. The Art Building with its colonnades is majestic. The three great courts—the Court of Abundance, with its Spanish Gothic and perpendicular lines and enrichments, is very beautiful; the Court of the Universe, with its fountains, arches, and Tower of Jewels, is grand yet beautiful; the Court of the Four Seasons is another gem. The effect, looking towards the Art Palace, with its towering columns and the lake in front, is charming.

The exterior treatment of all the buildings is wonderful, reminds me of my late run through Spain, of Salamanca, Toledo, Cordova—truly they have caught the medieval spirit.

The treatment of the exterior walls, the wonderful texture and the color effects, is very satisfying. The old reds and blues certainly are very effective.

One of the most effective things there is the exterior wall on Chestnut street, from Fillmore street on to the main entrance, a most unique idea, a wall of growing vines and where they have begun to blossom the pink of the flowers in contrast to the green is very charming. This wall was built up of boxes about eighteen feet square and six feet in length, filled with earth and seeded, and the whole mass of boxes laid up forming a solid wall some twenty feet in height, the plants covering up all joints and making a solid bank of greenery.

I had the pleasure of seeing the illumination on Ryan night which was most gorgeous, and again the illumination on an ordinary night. This was beautiful, the glowing reds of the openings and the lighting up of the buildings and towers sufficient to give the color effects, was a sight one could go miles to see. We took in the illumination both nights from the aeroscope.

The gigantic dome of the Horticultural Hall is very effective, and the Festival Hall by our friend Farquhar, is a gem. I had the pleasure of attending an organ recital and orchestra concert which were indeed fine.

To one knowing the site before work was commenced it is marvelous the effect they have arrived at—that mud hole now the scene of beautiful buildings, and the grounds the way in which they are laid out, the wonder of the trees and foliage, all having been accomplished in so short a time, this is the best advertisement of what can be done in California. The wonderful flowers, the beds of tulips, and the Holland exhibit, the color effects of the flowering plants, the sheltered and shaded spots of the many courts, makes one happy to rest and take in the beautiful surroundings.

The interior exhibits are all that a fair could ask, fully exploiting the products of the coast, the Pacific Islands, and the world. One of the things that interests the architects is the wonderful exhibit of Philippine woods.

Another thing which shows the effective and pleasing way in which an exhibit can be handled is shown in the Canadian Building. It is well worth while to spend an hour or two in the Art Exhibit, there is some very good stuff; and to wind up, the Zone can use up a few hours advantageously,—the Panama Canal exhibit, the Grand Canyon, the Yellowstone, and when one is hungry the Old Faithful Inn is satisfying.

Truly I had a most strenuous, entertaining and educational visit to the Panama-Pacific International Exposition at San Francisco.

* * *

More About State Building Competitions

Preliminary steps are being taken by the State Board of Control to float the million dollar bond issue authorized by the California Legislature for a State building in the San Francisco Civic Center. Governor Johnson has signed the bill permitting the holding of competitions for both the San Francisco and Sacramento buildings and the State Engineering and Architectural Departments have given their approval of a program to be prepared according to the rules of the American Institute of Architects. This is as it should be and both competitions ought to attract the best architectural talent in the State. Nothing will be done in regard to the program until the bonds are sold. State Engineer W. F. McClure says that if the San Francisco building is designed in keeping with the Civic Center standard, and if the various departments are given all the space they have asked for in the building, it will take $2,500,000 instead of $1,000 000 to build the structure. The San Francisco competition will come first, the Sacramento one depending upon a satisfactory understanding with the property interests in control of the site.

* * *

Telephones and Planning

The announcement of telephonic conversations between San Francisco and the principal cities of the eastern coast of the American continent, during which the human voice was heard for a distance of 5 000 miles, calls attention to the advance that is being made in the practical application of an invention whose possible influence on the placing and the arrangement of buildings, and on the whole question of the development and general lay-out of urban areas, does not appear to be generally recognized. It is probable, however, that this influence will be very considerable where convenience of arrangement and intercommunication are concerned. Yet, so far as we are aware, neither our architects nor our town planners have made any serious study of the subject. The "Influence of the Telephone on the Planning of Large Buildings" would make a good title for a paper at the coming session of the American Institute of Architects.

* * *

The Road Contractor's Joke

A Devonshire road contractor was being taken to task by his surveyor because he had not the required quantity of road material broken and ready for use. "What can I do?" the old man asked. "I can get no help. My son, who used to assist me, has joined the navy, and is now with the North Sea fleet. Of course, if you tell me I must get the stone," he concluded, "I will send to Sir John Jellicoe—tell him the roads cannot wait, and that he must send my son home."

Says Tower of Jewels Might be Made of Ice Cream

JOSEPH PENNELL, the distinguished etcher, biographer of Whistler and famous wherever the English picture may be drawn, is quoted by an interviewer in whom we may have confidence as saying "The Tower of Jewels (at the Exposition) might be made of ice cream."

Now we are not told just what Mr. Pennell's views on ice cream are. Some people value the frozen confection very highly; but we may safely assume that the artist wished in a way to deprecate the architecture of the Tower of Jewels. Those people who base their artistic judgments on the words of the great must feel horrified because they have formed an opinion so frail that it may be punctured by the needle of the etcher. For surely Joseph Pennell is about the most distinguished artist who has yet visited the Exposition City since the Tower of Jewels became the feature of the Jewel City.

The people of San Francisco have looked upon the Tower of Jewels, or rather looked up toward it, and have called it good.

Yet Mr. Pennell says it might be made of ice cream.

So might the Partheneon, for that matter of mocha ice cream in a brick; so might nearly any architectural masterpiece of the world, for the ice cream manufacturers have rare cunning in their cold fingers and can model strange shapes out of the congealed custard.

We think, however, says an editorial writer in the San Francisco Call, that what Mr. Pennell meant by his remarks on the tower was that it was quite too fancy, several shades too ornate—too much like a picnic dish, a holiday repast. If our assumption is correct, then the Tower of Jewels is splendidly fitted to the function it serves—it is ornate, for it distinguishes a festal event, it is made for the greatest holiday the country has celebrated, the holiday of rejoicing because of the opening of the Panama canal.

Our opinion is that Mr. Pennell is right in saying that the Tower of Jewels has an ice cream connotation. His error lies in assuming that the dominating architectural feature of the Exposition should not be of holiday, festal design, fitted to arouse in the soul of the beholder joyous exultation. There is a sublimity in the beauty of the Palace of Fine Arts at the Exposition and loveliness in the abounding grace of the Court of Abundance—and there is joyous force and sprightly power in the Tower of Jewels, and holiday beauty in the structure, and whether it could be duplicated in ice cream is a matter of small concern.

* * * * *

Here is another impression of the Tower of Jewels. It is the view of John Strong Newberry, who writes rather disparagingly of the Tower's artistic appearance:

"You should see the San Francisco Fair first at night. The wonderful lighting makes it seem a resplendent dream, a Greek's dream of the Arabian nights. Everywhere are domes, some iridescent, all shining. There are towers, too, of course, but they do not bulk largely in the general impression, save for one—the tower of jewels. You see it as you enter beyond the fountain of energy, where water jets widely out from above a stone world supported by kneeling figures and surmounted by an equestrian superman, on whose outstretched arms stand fairy trumpeters. In the broad pool mermaids and mermen ride resisting sea monsters. The tower faces you with confident, glittering boldness. I heard a man say that the gates of heaven must look like that. For all its height is hung with glittering bits of glass and powerful searchlights cover it with a twinkling glory. And yet the thing is very bad, as banal as the hymn-book heaven itself. It looks like a decoration cut from a colossal wedding cake. It is the fair's one glaring error. And San Francisco spent $70,000 for those bits of colored glass, a glittering disguise for an artistic blunder. The worst of it is that the general public falls down and worships it."

Inside Fire-Escapes for Apartment Houses

By W. W. AUSTIN

IT has long been the desire of builders of apartment houses, to have devised some new type of fire-escapes, which would comply with the provisions of law, and at the same time remove from their buildings the unsightly iron framework, which is an eyesore to the intelligent observer, and as a result, a deterioration in the value of the structures. The law regarding fire-escapes in large cities is very strict. The escapes must be constructed with every possible safety device known to modern architecture, and in such a way as to meet the approval of the executives of the Building Code and of the Tenement House laws.

The more families the building is intended to house, the more stringent is the law to make complete the means of escape in case of fire. To enforce the laws the common "fire-escape" to be found on all apartment buildings was devised, and since its invention scarcely an improvement has been made in the method of its construction. The iron balconies are erected on the facade of the building, front or rear, as may prove most convenient to the plans of the architect; straight up and down iron ladders, reaching to the ground, are attached to the balconies, and, presto, the work is accomplished. The building is declared free from hazard to human life by means of fire, so far as human intelligence can render it so, and the grotesque fire-escapes continue to corrode, and become more unsightly from day to day, until they are a blot on the landscape.

But it is not only the unsightliness of the fire-escapes that forms the chief objection to the present system. If left to themselves they would still be an eyesore to the citizen of ordinary refinement. But they offer to tenants a source of refrigeration in the summer months, of which they avail themselves, despite constant warnings from the authorities. The escapes are, as a rule, loaded down with packages of food, garbage cans, ash cans, and other articles which the housewife or her servants find it convenient to place upon them. This custom makes them unsanitary, and a perpetual danger to the public health, a danger which is not to be treated with indifference by any well governed city. In the case of the average tenement or apartment house the fire-escape is often the storage room of the family cast-offs, which makes is a disturbance for the fire department, which is compelled semi-annually to make a crusade against the litter piled on the fire balconies.

A remedy for these evils has been suggested, and is to be put into practical operation in the construction of an apartment house in Bronx Borough, New York City, of which Andrew J. Thomas of that borough is the architect. He has created an apartment house which will be free from the conventional fire-escape, yet will still have adequate avenues of safety from the danger to life by conflagration. Under orders from an owner of a plot of ground on the Grand Boulevard and Concourse, Mr. Thomas has prepared plans which incorporate his new ideas in fire-escapes, making the new structure the first multi-family house so equipped in New York City. His new conceptions promise to revolutionize future constructions of buildings for which the fire-escape is a necessity.

Under the Thomas plan the haven of safety for tenants, in case of fire, will be in the center of the building. In the courts at either side of the structure will be built a fire-staircase, running from the yard of the court to the roof, and open to the air. The staircase will be similar to those in the interior of the building, except that it will be of steel, and not the almost perpendicular ladder-like arrangement from balcony to balcony, which comprises the present style of fire-escape. Access to this staircase will be had, on each floor, through the vestibule, and by private entrances from each apartment suite. Tenants will

not have to climb through a window to reach the fire-escape, as they now have to do. The entrances from the vestibule will be fire-proof, with wire glass, and the entrances from the apartments will be self-closing fire-proof doors. Mr. Thomas claims as another advantage for his plan, that it will permit the making of a real fire-stop of brick or concrete between teh front and rear section of the building, which will check the advance of flames.

This new fire-escape design is applied by Architect Thomas to the development of a 50-foot plot. Within this area he has provided eighteen rooms to the floor. The rooms are arranged in four suites of three, four, five, and six rooms, each set having a private entrance to the fire staircase, besides the entrance through the vestibule, or public hall, arranged about mid-section of the structure. As each floor is to have eighteen rooms, the loss of rental space which will result from the inside fire-escape is scarcely noticeable. The plan has received the commendation of fire-fighters, who have assured the architect that his scheme is more adequate than that of the present type of fire-escapes, because it will permit them to carry hose better through the fire exit in the basement, and to run hose much more handily up the stairs. The Real Estate Magazine, published in New York, says the financing of a structure equipped with the new fire escape is favorably regarded by lending authorities. One of them has asserted that he would lend from $2,000 to $3,000 more on a structure so equipped, than he would advance on the same type of building with the fire-escapes rigged on the front and rear.

* * *

Advantages of the One-Story School

The bungalow of the Pacific Coast and the cottage of the Middle West are two very significant expressions of the advantage of one-story buildings for dwelling purposes. Convenience, safety and economy in first cost and operation are characteristics which make these types of buildings particularly attractive, especially in suburban communities and smaller cities.

The advantages of the cottage home are slight in comparison with the special utility of the one-story schoolhouse. In the small town, the one-story school costs far less to erect and maintain than a two-story or three-story building of equal capacity. It is easier and cheaper to heat and ventilate. It can be better lighted—from the top if desired. Fire escapes and elaborate fire protection system are unnecessary. Stair climbing and its dangers to small children, growing girls and women teachers are eliminated. The dangers of panic are altogether nil, particularly if each room has an emergency exit directly leading outdoors. The feeling of safety resulting from such an arrangement alone is worth more than any extra expense which the one-story school might involve.

From the administrative standpoint, the flexibility of one-story schools is notable. They can be enlarged, almost indefinitely, without alterations or serious disturbance of the old parts.

Finally, in mild climates, the one-story school can be built in the form of a hollow square, with an open court and cloisters. Such a building may be a fresh-air school the year round and may be a source of untold blessings to anemic children.

The only objection to the one-story school is the amount of ground which it covers. In large cities it is not practical, and it cannot be applied to high school uses. For the smaller cities its many advantages clearly outweigh the cost of the land which it may occupy.—School Board Journal.

Fig. 1. PEACE PROTECTING GENIUS

Paul Barlett's Pediment Group for the House Wing of the National Capital

By MITCHELL CARROLL*

A CONSPICUOUS omission in the artistic embellishment of the National Capitol will soon be remedied by the work of one of America's most eminent sculptors, Paul Wayland Bartlett. The House of Representatives wing was completed in 1857. For more than half a century the pediment of the east portico has been blank, while the pediments over the main entrance and the Senate wing were very promptly adorned with symbolical figures, however inadequate.

In the latter part of the Roosevelt administration, on the suggestion of Representative McCall of Massachusetts, the Joint Committee of the Senate and the House on the Library recommended that the House pediment be provided with fitting sculptural adornment. The Act of Congress authorizing the expenditure of $75,000 for this purpose was approved April 16, 1908. A communication was addressed to the members of the National Sculpture Society requesting a list of ten sculptors best qualified in the opinion of their colleagues for this important commission. At the head of the list, when compiled, appeared the name of Paul Bartlett. The contract with Mr. Bartlett was signed in February, 1909, on the delivery and acceptance of his first model, and he has been engaged continuously since that time upon this important task which is now happily nearing completion.

The framework of the impediment is a fine example of eighteenth-century classical architecture, which is not so exacting in its requirements as the pure Greek, and gives more freedom to the inventive qualities of the sculptor. Mr. Bartlett wished to escape the banality of so much modern sculpture in the use of classical types to express American ideals. The general subject is the democracy of the United States as expressed by types of the working people. He selected as his central idea, *Peace Protecting Genius*. In the working out of this theme he has not only created a distinctively American conception but has produced a pedimental composition which obeys the sculptural law of frontality in preserving the perpendicular architectural central line and at the same time presenting the two distinct halves fused into a harmonious whole.

The extreme length of the pediment is 80 feet. The space for the sculptured groups is about 60 feet. The height in the centre is about 12 feet. The depth of the recess of the tympanum is 3 feet. The horizontal cornice is about 60 feet from the ground and 43 feet from the top of the steps.

Of the central group (fig. 1), above referred to, this armed Peace is a woman of majestic mien draped in a mantle which almost completely hides her coat of mail. Her buckler leans against an altar on her left, while she extends her protecting right arm over the winged and youthful figure of Genius who is nestling confidingly on the ground at her feet, and holding care-

* The Octagon, Washington, D. C. Courtesy of Art and Archaeology.

Fig. 2. FIRST GROUP ON THE RIGHT OF PEACE: YOUTH, REAPER, HUSBANDMAN AND OX

fully upright his flaming torch. This strikes one as a more effective arrangement than the infant Plenty resting on the arm of Peace in the celebrated group of Cephisodotus, which doubtless suggested to Praxiteles the grouping of Dionysus on the arm of Hermes. The balance of masses has been studied with great care, and the central group is adequately sustained on each side.

The right side of the pediment is devoted to agriculture and pastoral life; the left represents industry in shop and foundry. As the genius of America is found in the working man, the sculptor has gone to him for his inspiration in designing the various figures. The first group (fig. 2) to the right of the Goddess of Peace consists of three figures—a reaper, a youth, and a husbandman with an ox. The reaper (fig. 3) is standing in a field of grain with one arm resting on the handle of a scythe. His features bear a striking resemblance to Abraham Lincoln, who fulfils, more than anyone else, the ideal of the genius of the country, for the thousands of Lincolns still unknown to fame are the backbone of the nation. The youth in the background is looking out into space toward the future. Next is the husbandman (fig. 4) represented as bending over a huge ox, a powerfully built man, a reminder of the hardy adventurous settlers who early crossed the plains to the West.

Next to the agricultural group is a pastoral one (fig. 5), representing a woman, with her children, harvesting the field. While busy picking up the corn, she has stopped a moment to look at her children. A nude boy at her side (fig. 6) is bearing bunches of grapes, and the little lad farther on half caressing, half wrestling with a ram, while a lamb sleeps beside him.

The first group on the left side (fig. 7), representing industry, consists of four figures—the printer in the background examining some sheets just off the press; the iron-worker, leaning on his hammer, the founder, pouring metal, and a helper looking on in the background.

The next figure (fig. 8) symbolizes the production of textiles, expressed by a woman, sitting beside a spinning-wheel and measuring a large piece of cloth which she stretches out before her. Beyond this is a suggestion of the life of the sea-coast, a boy with his boat fishing; he has just caught a large fish which he will add to the number already safely thrown upon the shore behind him. The pediment at each end concludes with a wave, symbolizing the Atlantic and the Pacific, the eastern and western boundaries of our country. This brings to mind the figures of the river-gods, Alpheus and Cladeus of the Olympia pediment, and the Ilissus and Cephissus of the western pediment of the Parthenon.

The principle of the composition unfolds itself in a natural way. The central group of Peace protecting Genius is light in sculptural tone, while the transitional groups on the left and right are stronger in lights and shadows. The ox and the cloth measured by the woman, afford two more lighter spots setting off the darker groups between. The remaining figures are rythmical accessories. Thus the sculptor uses not only form but also the play of light and shade to bring out the central idea. This obvious use of light and shade in sculpture is characteristic of Mr. Bartlett's work.

It is interesting to observe how effectively the sculptor has solved the problem of making the ordinary daily costume of the American working-man sufficiently ornamental to fit in with the charm and beauty of the classical architectural setting. Realism can be used only to a certain extent in dealing with architectural problems. The central figure is somewhat more classical and impersonal than the rest, in order to have a note that might better link the whole composition and architecture together. The beholder forgets the homeliness of some of the details of the figures in the charm and measure of the arrangement and execution, and in the employment of the various decorative effects produced on the one side by the idyllic disposal of wheat and

Fig. 3. THE REAPER

Fig. 4 THE HUSBANDMAN

Fig. 5. SECOND GROUP ON THE RIGHT: MOTHER AND CHILDREN HARVESTING THE FIELD

Fig. 6. MOTHER AND CHILD

grapes, apple-branches and flowers; on the other by the presence of the spinning-wheel, the little touches of vapor from the molten metal, and the fishes thrown carelessly on the beach.

Suffice it to say that Mr. Bartlett has ingeniously solved the familiar technical problems presented by pedimental sculpture—the essential harmony in style with the building, the arrangement of the figures along a level floor so as not to disturb the horizontal line of the lower cornice, the gradually diminishing height of the figures from the center by difference in attitude and not in size, the avoidance of a rigid symmetry by a rhythmical flow of line from the center to the corners. How well he has succeeded is seen in the fact that if the confining slanting members above the figures were removed, they would all appear to be quite naturally disposed at their respective occupations.

Another technical feature deserving mention is due to the fact that the group, being on the east portico of the Capitol, would more naturally be first observed from the side rather than from the front. This problem has been met by dividing the groups in successive planes which melt into, yet contrast with one another, so that the figures are equally impressive and interesting from any point of view.

After years of study Mr. Bartlett has selected Georgia marble for the figures, which he regards as warmer in tone than Italian marble. The workmen are now engaged in chiselling the figures from the completed models, and before many months the visitor to Washington will see not the blank wall of the pediment, but a composition symbolizing the genius of the American people and comparing favorably in invention and execution with any similar group of sculptures, ancient or modern. The completion of this important work on our great national edifice should have a far-reaching influence on the development of sculpture in this country, setting as it does a standard of nobility in composition and execution.

Fig. 7. FIRST GROUP ON THE LEFT: PRINTER, IRON-WORKER, FOUNDER, HELPER (PHOTOGRAPH TAKEN FROM THE SKETCH) FIGURE WITH WHEEL REPLACED IN EXECUTION BY WOMAN MEASURING CLOTH

Fig. 8. SECOND GROUP ON THE LEFT: WOMAN WITH SPINNING WHEEL; BOY WITH BOAT.—WHEN THE WORK IS COMPLETED A FISHING LINE WILL EXTEND FROM THE GILL OF THE FISH TO THE HAND OF THE BOY

HOUSE OF MR. PAUL O. TIETZEN, CLAREMONT COURT, CALIFORNIA
W. GARDEN MITCHELL and CHARLES E. HODGES, ARCHITECTS

CARNEGIE LIBRARY, SAN ANSELMO, CALIFORNIA
W. Garden Mitchell and Charles E. Hodges, Architects

Recent Work of W. Garden Mitchell and Charles E. Hodges

THE accompanying plates show some of the recent work of W. Garden Mitchell and Charles E. Hodges, associate architects of San Francisco. Aside from the Carnegie Library at San Anselmo, the pictures represent the efforts of this firm in domestic architecture. The fact that only residence work is illustrated does not mean that the firm confines itself exclusively to domestic architecture.

On the contrary, Messrs. Mitchell and Hodges have executed some very creditable plans of hotels, commercial buildings, banks and schools. The style of architecture adopted by them is English Domestic, the following plates being very creditable examples.

* * *

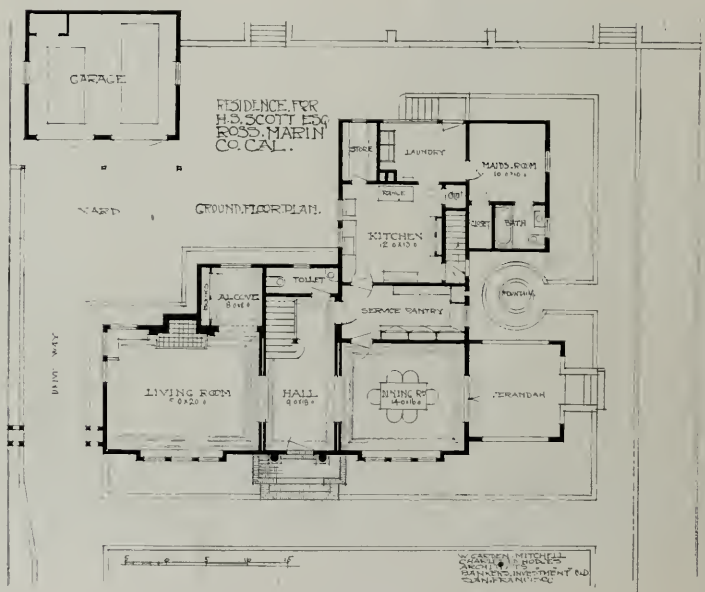
San Francisco Chapter Elects New Officers

The annual meeting of the San Francisco Society of Architects was held at Jules at 12.30 on Wednesday, June 9th. The following officers were elected for the ensuing year:

President—Frederick H. Meyer.
Secretary—J. Harry Blohme.
Directors—John Bakewell, Jr., Hermann Barth.

Mr. Weeks, the present Vice-President, will continue to fill the office until a successor is elected.

HOUSE FOR MR. H. S. SCOTT, ROSS, CALIFORNIA
W. Garden Mitchell and Charles E. Hodges, Architects



GROUND FLOOR PLAN, HOUSE FOR MR. H. S. SCOTT

HOUSE FOR MR. LLOYD P. LARNE, GRASS VALLEY, CALIFORNIA
W. Garden Mitchell and Charles E. Hodges, Architects

HOUSE FOR MR. GEORGE A. MOORE, ROSS, CALIFORNIA
W. Garden Mitchell and Charles E. Hodges, Architects

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COMPETITIONS

While still furnishing a means, perhaps the best available under certain conditions, for selecting an architect, there are numerous indications that the institution of architectural competitions is gradually declining in popularity in this country. Where, a few years since, competitions were sufficiently numerous to provide almost continuous employment for some firms of architects, who secured the major portion of their work in that manner, they are today, at least when the immense amount of important work for which architects are annually chosen is considered, comparatively infrequent.

The causes for unpopularity are quite numerous and it would be difficult to assign one chief reason for the change that seems to be taking place. Perhaps the difficulty in devising any method or plan of competition that affords satisfactory assurance of the winner's ability to secure the faithful execution of his design, without committing proprietors to considerable expense, is having its long-looked-for effect. There have been notable instances of architects lacking in practical experience and even ability to discriminate in the selection of assistants or superintendents who are adepts in the preparation of competition drawings and whose dexterous draftsmanship has enabled them to carry off the prize in many a warmly contested but open-to-all competition. The results in these cases have probably had the very natural effect of somewhat impairing confidence in this method of selecting an architect.

Of course, there are instances, and many of them, where satisfactory results have been obtained from the adoption of the competition method, but they have ordinarily followed where the competitors were carefully chosen from the ranks of competent and thoroughly experienced practitioners and were adequately paid for their sketches. Also considerable money was expended for expert advice. We have in mind the competitions for the Oakland and San Fran-

cisco city halls, won respectively by Palmer & Hornbostel and Bakewell & Brown.

The American Architect says that one serious difficulty with the system seems to be that it has been found inexpedient, if not impossible, to carry on many of the more important competitions on lines prescribed by best practice, owing to the general desire on the part of owners to secure the greatest possible amount of free advice in the form of numerous competition sketches. Having obtained this advice the owner invariably selects an architect not in the competition and with the fund of information at hand he is able to produce something fairly creditable—largely at the expense of the other fellow.

If the profession generally would adhere strictly to the rules and conditions under which competitions may properly be conducted as prescribed by the American Institute of Architects, the objectionable and unsatisfactory features would be reduced to a minimum and the benefits correspondingly increased. It is worthy of note that a majority of the few competitions of importance held during the past year have been conducted in accordance with the Institute requirements. The possibility of a competition for some of the large state buildings authorized by the California Legislature is very gratifying. Preliminary plans are now under way for a competition for a $1,000,000 State building for the San Francisco Civic Center.

CALL FOR BIDS NOTICES

Many public officials consider the call for bids notices they insert in the local papers merely a further step in the legal proceedings necessary for the carrying out of the improvement. The law requires that the work be advertised and therefore they comply with the statutes. As the usual thing the only information in these advertisements of value to a contractor is the statement that the city is asking proposals for a piece of work and that bids will be opened at a certain time. Commonly no details are given as to the size of the job and so the outside contractor must investigate for himself to find out whether the undertaking is big enough or small enough for him to figure on. In a season when little work is being offered almost any bidding opportunity will be followed up; but when there are plenty of contracts in sight a contractor does not have much time to look into the uncertain jobs.

A town in Ohio is now asking for bids on street improvements. No one would guess from the official advertisement that the estimated cost of the work is over $165,000. Had this fact been stated it would have made the notice half a line longer but it would have increased its effectiveness in securing competition from contractors a hundred fold.

BEAUTIFYING THE HOME

Landscape gardening effects in connection with building are becoming exceedingly popular, especially so in respect to home building. We Americans are now beginning to realize what, abroad, they have well understood and practiced for years,—that it is not so much the house itself as it is its surroundings which make an attractive place. Gardening schemes may be simple and inexpensive, or more elaborate as desired, and the space to be treated may be large in extent or small like the ordinary city yard; but in any case a pergola is the real essential thing that is needed today, if one is to be in style.

A pergola, properly designed, is the connecting link, architecturally, between the house and the garden; or it may serve as the terminal of a gardening plan. The pergola is the immediate concern of the architect and builder, for he must see to it that it is: first, of the proper design to harmonize with the style of the house, and, second, that it is properly constructed of suitable materials and set up as it should be. With this substantial and artistic

(Concluded at bottom of Col. 2, Page 106.)

With the Architects and Engineers

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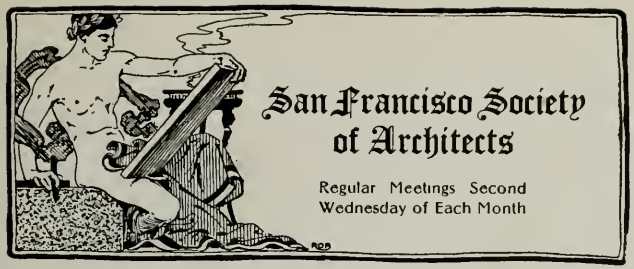
foundation work, the garden lover can then plant and train his shrubs and vines to produce a really beautiful effect. The variety of pergola designs and their adaptation to meet the needs of special cases are truly remarkable.



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The Architect

(Contributed by A. G. in Life.)

Disciples, heed my warning lecture
And take no stock in Architecture:
For Architects must learn by heart
The Fifty-seven Styles of Art
To build the Rich Burmese Châteaux
And Saracenic Bungalows.
In hope of Fame and Proud Positions
They enter Public Competitions
And sweat beneath Electric Fans
Computing Costs and draughting Plans;
And after all their Works and Wastings
Who gets the job?—Carrère & Hastings!

Class "A" Market Building

Plans are being prepared by Architects Cunningham & Politeo, First National Bank building, San Francisco, for an immense market building to be erected on the southeast corner of Eighth and Market streets, San Francisco, for the McCreery Estate Company. Mr. Cunningham is now in the East gathering data with the idea of embodying the very latest features in market buildings in the San Francisco structure. The building will be 275 x 550 feet, 40 feet high, with basement. It will have steel frame, concrete walls, and exterior of white glazed tile. The total cost will run close to $100,000.

$30,000 Residence

Architect G. A. Applegarth, of San Francisco, is completing plans for a $30,000 private home to be erected in West Clay Park in San Francisco for Mrs. Margaret Sudden. The style of architecture will be Italian Renaissance.

Concrete Warehouse

Architects Reid Bros., of San Francisco, are preparing plans for a large concrete warehouse to be erected on the San Francisco waterfront.

San Francisco Residence

Architect Frederick H. Meyer, of San Francisco, is preparing plans for a two-story and basement frame, stucco and brick veneer residence to be erected at Leavenworth and Havens streets, San Francisco, for Louis R. Dempster, of Dempster Bros. The house will cost in the neighborhood of $10,000.

Architect Donovan Moves

Architect John J. Donovan, of Oakland, has moved from the Security Bank building to 323 Dalziel building, that city. Mr. Donovan has just completed plans for a two-story concrete and brick veneer building for the Oakland Municipal Woodyard, the estimated cost being $15,000.

Honor for Washington Miller

Washington Miller, a San Francisco architect and engineer, has been retained to superintend all construction work in connection with the big sugar refining plant now being erected in the Potrero at a cost of a half million dollars.

Addition to Convent

Architects Welsh & Carey, of San Francisco, have prepared plans for a three-story and basement frame and rustic addition to the Convent at Haight and Laguna streets, San Francisco. The improvements will cost about $15,000.

Concrete Factory

Architect Charles Peter Weeks, of San Francisco, will shortly award contracts for a $200,000 reinforced concrete factory to be erected at Brannan and Fourth streets, San Francisco, for the John Bollman Co.

Special Exhibition of School Architecture

Readers of The Architect and Engineer of California are invited to take part in an exhibition of school architecture in connection with the Eighth Congress of the American School Hygiene Association, to be held in San Francisco June 25th and 26th. This exhibition should be of unusual interest, as the most prominent school architects, both east and west, are expected to participate.

As this is to be a special exhibition, only such plans, pictures, etc., are desired as will illustrate some distinctive merit from the viewpoint of school hygiene. Schools showing special arrangements for heating and ventilation, lighting, cleaning, general sanitation, etc., will answer this purpose, but also, in a broader way, work which shows distinctive ideas of suitability and character. It is planned to classify the exhibits along such lines and thus enhance their usefulness and interest.

Material should be delivered, charges prepaid, to the American School Hygiene Association, care of Superintendent Civic Auditorium, San Francisco, not later than June 24th. It is planned to transfer the exhibits to the Palace of Education after the Congress, subject to the senders' wishes and to the space that will be available. In any case the association will see that all material is carefully handled and returned prepaid. Intending exhibitors will confer a favor by notifying Charles Sumner Kaiser, 57 Post street, San Francisco.

Jewish Synagogue

Plans have been completed by Architects Neumarkel and Arnold for a new Synagogue building on Webster street, between McAllister street and Golden Gate avenue, San Francisco, for the Congregation Kineseth Israel. The building will have a frontage of fifty feet and a full depth of 125 feet. Though of frame construction, its entire exterior will be done in cement finish, giving it the appearance of a stucco, brick, or stone structure. There will be a spacious auditorium, with Sunday-school room and reception parlors. The cost is estimated at $25,000.

Will Build Fine Home

Baldwin & Howell of San Francisco have sold for Joseph S. Silverberg, the lot on the northerly line of Broadway, 125 feet west of Broderick street, San Francisco, to Mrs. Julia de Laveaga Welch, who will shortly erect a fine residence.

League is No More

The Architectural League of the Pacific Coast has decided to disband. Lack of support is the reason.

A Manless Office Building

The Women's Council of St. Louis, composed of fiftv-four organizations and clubs, will erect an office building in the downtown district from which men will be barred as tenants and employees. Women will run the elevators and officiate as window cleaners and janitors. If the announcement is accurate they will also look after the boilers and the machinery in the cellar. The architect will be a woman, but the actual builders presumably will be men, since the feminine invasion has not yet extended to the occupations of steel frame erector, riveter, bricklayer and carpenter. Excavating also is man's work and the materials must be purchased from masculine firms. But the intention seems to be to construct, so far as possible, a monument to the new feminism.

Chico Architect Busy

Among the architects in the interior who seems not to have suffered by the general building depression is Chester Cole, Waterland building, Chico, who has more than $100,000 worth of county work on the boards and in course of construction. He has completed plans for a $30,000 Class C apartment house to be erected in Chico for F. W. Miller, a $7,500 Carnegie library is to be built in Gridley from his plans, also a $10,000 residence for Jost Hahn at Arbuckle, a Lutheran Church at Orland, and alterations to the Noonan building in Chico.

Governor Signs Bill

Governor Johnson has signed the bill passed by the last legislature to repeal the Law of 1872 requiring competitions for the selection of architects for public school buildings. The law will become effective next August and the old law which has caused so much worry to school boards and architects of California will pass into oblivion, unwept and unsung.

To Practice Architecture

William B. Thomas, Yosemite building, Stockton, and Edward A. Stuhrman, Coca-Cola building, Maltimore, Md., have been granted certificates to practice architecture in California.

E. A. Mathews has been elected president of the Northern District Board of Examiners.

Personal

The firm of Parkinson & Bergstrom, which has designed more large commercial buildings on the Pacific Coast than any firm of architects in California, has dissolved partnership, Mr. Parkinson retaining the old office in the Security Bank building, while Mr. Bergstrom has moved to 1129 Citizens Bank building, Los Angeles.

Oakland Theatre Loan Not Yet Secured

The filing of an application for a building permit for the construction of a Class A store and theatre building on the McPike property, east side of Franklin, north of Fourteenth, Oakland, does not mean that this long contemplated project is to go ahead now. There are to be some changes in the Oakland building ordinance and it was decided to secure a permit before the new law goes into effect. Architect Ed T. Foulkes, Crocker building, San Francisco, states that while the plans are practically completed, no bids will be taken or contracts let until the loan is secured. The building is expected to cost $100,000.

Store and Loft Building

A three-story Class C store and loft building is to be erected on Beale street, between Market and Mission streets, San Francisco, from plans by Architects Wright & Rushforth, 354 Pine street, San Francisco. The owner is F. S. Parsons, and the building will cost $60,000. Bids for the pile foundations only have been taken, and the contract for this work has been let. Structure will be 91x137½ feet, and will contain stores and lofts, brick walls, wood floors and joists, two freight elevators, composition roof, galvanized iron skylights and cornice.

Another Nob Hill Apartment House

Andrew Rudgear, of the Rudgear, Merle Company, and W. H. Leahy, have bought the lot, 72½ feet on California street, opposite the Pacific Union Club, San Francisco, and will erect a high-class family apartment house. Plans for this building, in all probability, will be prepared by Architect Ed. T. Foulkes, Crocker building, San Francisco.

Seven-Story Concrete Apartments

According to the Kern-Neilan Company, 316 Bush street, San Francisco, they have sold for Robert Green to a client whose name is withheld for the present, a lot on the south side of O'Farrell street, west of Polk, running to Olive avenue, San Francisco, upon which will be erected a seven-story reinforced concrete apartment house, to cost $50,000.

$10,000 Merced Residence

Architect Ralph P. Morrell of Stockton, has let a contract to W. K. Widenmann of Merced for the construction of a $10,000 two-story and basement frame and stucco residence on L street, Merced, for Mrs. Lydia Grimes of that city. Metal lath will be used on exterior, and the interior finish will be red gum.

Architect Polk Has Some Good Ideas and Could Be Elected Mayor

Willis Polk, who refuses to consider himself in the light of the right kind of Mayor for San Francisco, has designed and specified his ideal for a Mayor.

Polk has drawn up the following specifications for the job:

No programme, no caucus, no promise.

No reception committees, no glad-hand stuff, no foolishness—just business.

Why trim your sails to the winds if you are not a sailor, but just a Mayor?

Why should not the city conduct its business along business lines? Why should all interests in a community maintain a perpetual warfare in the hope that one interest, and one alone, shall rule?

Why of all communities should not this community get together?

Why nurture the idea that big business fattens on little business?

Why not do business, both big and little?

The world treats a person the way a person treats it.

A community will be treated the way it treats itself.

If all the interests in a community ever trust a man and that man treats all interests alike, then that community will get a good Mayor.

But he would have to be a man of backbone.

A man who would be steadfast of purpose.

A man who would not play politics.

A man who would attend to duty.

A man who would not listen to the siren voice of ambition.

A man who would not compromise his conscience for the sake of political advancement, personal gain, or to do friends a favor.

In other words, a man who would do business along business lines, the way city business should be done—the way private business is done.

The Coming Engineering Congress

The materials of engineering construction will receive special attention in the proceedings and discussions of the International Engineering Congress to be held in San Francisco, September 20-25.

The field will be treated under eighteen or more topics, covering: Timber resources; preservative methods; brick and clay products in general; life of concrete structures; aggregates for concrete; water-proofing; volume changes in concrete; world's supply of iron; life of iron and steel structures; special steels; status of copper and world's supply; alloys; aluminum; testing of metals, of full-sized members, and of structures.

Some twenty-five papers are expected for this volume, prepared by authors representing five different countries. The list of authors includes many of the most eminent names in this field of engineering work throughout the world.

Hospital Addition

Architect William Mooser, Nevada Bank building, San Francisco, and the Supervisors of Tuolumne county, have let a contract to McLaren & Peterson, Sharon building, San Francisco, to construct a two-story concrete addition to the County Hosipital at Sonora, for $23,355. There will be steam heating and vacuum cleaning plants, composition floors, hardwall plaster, etc.

Southern Pacific's New Oakland Building

The Southern Pacific Company has decided to erect a large office building in Oakland. When this structure is finished it will probably mean that the company will give up its offices in the Flood building in San Francisco and thereby take from San Francisco a large number of Southern Pacific officials [unless a second office building is erected in San Francisco]. Plans for the Oakland building are being prepared by Architect O. G. Traphagen, 244 Kearny street, San Francisco. The structure will be ten stories and basement and will represent an investment of $1,000,000. The Oakland Commercial Club, through its managing director, Joseph E. Caine, did splendid work in bringing pressure to bear upon the railroad to build in Oakland.

New franchises will have to be obtained from the City of Oakland, for a rearrangement of the company's tracks, and as soon as this has been done, construction work will be started. This will probably be early in 1916, the plans to be finished the latter part of this year. The building will be Class "A," with steel frame, reinforced concrete floor slabs, tile or metal lath partitions, exterior walls of brick and terra cotta, metal trim throughout, store fronts, with plate and prism glass, terra cotta cornice and entrance, marble stairs and entrance lobby, electric passenger elevators, steam heat, oil burners, bronze elevator grills, stair railings, directory boards and mail boxes, hardwood interior finish throughout, vacuum cleaning plant, special lighting equipment, etc.

More About Potash Plant

In addition to information already given regarding the $100,000 plant to be erected at Agnew, near San Jose, from plans by Architect Wm. Binder, of San Jose, it is stated that construction will start inside of five months. Archibald Barnard, attorney, Merchants National Bank building, San Francisco, is president of the new company. The mechanical features of the plant are being designed by A. S. Wiester.

Architect for Porterville Theater

B. R. Remmel, Monarch building, Porterville, who was recently granted a certificate to practice architecture by the California State Board, is the architect of the new theater building to be erected at Garden and Main streets, Porterville, for A. R. Moore of that city. The design is in the Mission style, and construction will be Class "C." A complete heating and ventilating system will be installed.

San Anselmo Club House

W. Garden Mitchell is the architect of a $10,000 club building to be erected at San Anselmo for the Hearthstone Club of that town.

A Peculiar Ruling

The San Francisco local papers report that architects and general contractors in the city are wondering what will be the effect of a recent rule promulgated by the Master Plasterers, which gives the association power to open bids for plastering one day before the architect or owner sees them.

This rule compels the members of the Master Plasterers' Association to send their bids in duplicate through the office of the secretary of the association, one copy being forwarded to the owner or architect and the other retained to be opened twenty-four hours before the time for opening set by the owner or achitect. Under the rule, the lowest bidder is given permission to raise his bid if he discovers that he has "made a mistake."

Another rule forces the owner to accept the lowest bid, irrespective of whether he considers it from a responsible firm or not.

These two rules, it is feared in some quarters, may open the way for unfortunate practices which would add to the cost of construction and to the difficulties of owners and their representatives.

Chance for a Hindoo Contractor

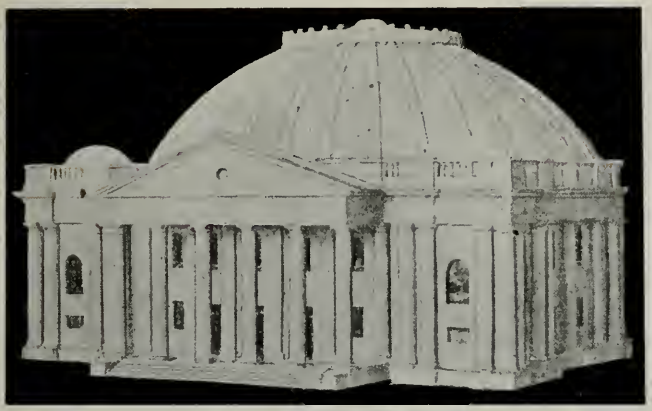
A $90,000 Buddhist temple in Honolulu which will surpass all previous efforts at temple building is planned by Japanese Buddhists. The temple as designed is to be the finest of its kind in the Occident. The walls are to be of concrete, with due consideration for western architecture. A large brass dome hung with bells will make it a landmark in Honolulu when completed. The work of construction will begin in July. There is to be a large assembly on the second floor from the ground, while the top floor will be devoted to libraries, classrooms, and offices. Provision will also be made for the Young Men's Buddhist Association and for the Buddhist Sunday School, which now has 700 members.

Two Schools for Redwood City

Two new schools are needed to meet the growth of Redwood City. County Superintendent of Schools Cloud and Stuart Frank have named a site selecting committee consisting of A. D. Walsh, L. A. Heiner, J. D. Hedge, and George H. Irving. The plans of the board call for a school at Five Points, and another in the Redwood Highlands District. No architect has been selected as yet.

East Auburn Masonic Temple

Architect Allen D. Fellows of East Auburn has completed plans for an addition to the building of W. G. Lee, which will be occupied by the various Masonic orders of East Auburn. The improvements will cost about $15,000.



DOME THAT STANDS SOLID WITHOUT INTERIOR SUPPORT

Trussed Dome Ridiculous Says Architect

(From the Los Angeles Tribune.)

It must be conceded that the want of positive information as to the principles upon which a dome, whatever be its material, should be constructed is not creditable to the present state of science.—Dictionary of Architecture, page 46.

WHAT'S this? A joke on the architects and engineers of the world for the last 2000 years?

That is the opinion of A. Chalmers, Los Angeles architect and builder, whose discovery promises to turn the building of all kinds of domes topsy turvy.

Domes form a vital part of modern as well as ancient architecture. On them hinges the principle of acoustics, the baffling, elusive goal of builders. They also hold the key to symmetry and beauty.

Now comes Chalmers with the declaration that the men who draw the plans and the men who do the building have been following a false theory, making their work twice as hard and expensive as necessary.

"What's the use of building a truss in the interior of a dome to fortify it when it will stand solid without it?" asks Chalmers.

"It is so simple," he says, "that it borders on the humorous. A truss inside of a dome, either in the building of it or in making it secure, is as useless as the fifth wheel of a wagon."

So Chalmers has been building models out at Polytechnic high school, demonstrating in a small way that the shell of a dome is as secure as a dome with an interior—that the pressure and stress, as Chalmers puts it, "equalizes and neutralizes." "Half an egg shell will stand on its own bottom," he says. "So will any other half sphere. Then why not a dome, provided the principle on which it is constructed is correct and the material is at all rigid.

"Even reeds will stand together without collapsing. Reed baskets will not collapse when turned upside down.

"I find that the ancients built their domes without interior trusses. Then some one thought a truss would help and builders have been following the delusion ever since, like the Chinese who burned buildings to get roast pig."

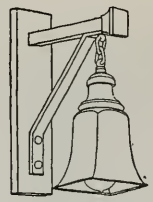
Students of physics have been trying to figure the Chalmers proposition, as well as architects, and they seem to agree with what his models indicate.

Elimination of trusses will cut the cost of dome roofs 50 per cent and insure perfect acoustics, according to Chalmers.

Polk Brings Suit

Architect Willis Polk has begun suit against the Regents of the University of California for $30,000 for alleged breach of contract. Polk alleges that he was engaged by the Regents to draw up the plans for a building to be erected on property belonging to the university on Sutter street, near Montgomery, San Francisco.

According to the complaint, John Martin and W. P. Hammon leased the property from the Regents, and were to act jointly with them in the construction of the building, which was to be a hotel. Martin and Hammon withdrew from the bargain, it is set forth, and the Regents failed to pay Polk for his plans.



Heating and Lighting

Plumbing and Electrical Work

Edited By CHARLES W. FORTUNE

Recognition of the Profession of Heating and Ventilating Engineering *

By CHAS. W. FORTUNE.

Heating Engineer and Contractor.—In installations, where a large amount of money is to be expended, the heating engineer should be considered as necessarily retained as the architect, to draw the plans and specifications, and these should be adhered to as closely as the architect's plans are, when bids are being taken. In this manner a right competition is obtained, when each contractor bids on the same layout, and not given the privilege to select a scheme of his own and tender on it, as is so often done. The party retained to do the engineering should be one who will do his work conscientiously and in a scientific manner, and when completed each part will correlate to the others and show that the system was designed for efficiency.

This means that the designer should know what he is doing, and be able at all times to give facts and figures on all parts of the installation. His plans and specifications should be complete in all ways, and state in plain language what the conditions are, so that the contractor will understand all parts, and not be obliged to assume conditions.

There are some features that may be left open, and to the discretion of the contractor, such as small details in piping, most impossible to show in plan, and even if specified, in actual practice it is found to be impracticable to install as shown. The omitting of these minor points gives some leeway to the contractor without in any way affecting the efficiency of the plant.

A great trouble often found in plans and specifications, is not the lack of small details, but a lack of exactness, in larger points, where the contractor may make more than one interpretation, which is very natural for him to do, if there is a chance for him to carry out the contract, with the least expense.

A few final words to show where each person connected with the designing of a heating, ventilating or power plant should stand. The engineer for the branches mentioned, should be considered to be as necessary as the architect, and the engineer should be *in* as early on his design as possible, and that should be when the preliminary drawings are being shaped into the intended design. As much confidence should be placed in the engineer as the architect, and not allow material men, or manufacturers' agents to influence the architect or owner into thinking they are not getting all they are paying for.

The engineer should also be free from any connections or interests, either making or selling any article he may have to install, but should have only ability as a profession to sell. He should not attempt to dictate in regard to the artistic design, any more than the architect should dictate to the engineer in regard to efficiency.

The day is fast approaching when the heating engineer will be recognized. It is now much more so in the East than on this coast, owing perhaps to the fact that there are not many professional heating engineers here.

Those that are here, however, are well recognized and much consulted, and may we hope that with an increased demand for big things in this section, that the ethical side of heating engineering may be recognized as readily as any other branch of professionalism.

* This article began in the May number.

The Status of the Illuminating Engineer

It is now nearly ten years since a number of pioneer lighting specialists came to the conclusion that the problems of illuminating engineering were distinct from those of the other enginering societies and consequently justified a new entity to be known as the illuminating engineer. In spite of dismal prophecies to the contrary their opinion has been more than justified during this period and today the illuminating engineer is accorded widespread recognition and in this country there is a flourishing society with 1500 members or more.

Illuminating engineers have made many valuable contributions to lighting methods, so that their work now stands

as a science, rather than an art. When this distinction was first drawn "artes" meant the things a man could do, "scientia" the things he knew. Illumination has long since passed the stage of mere applied intelligence and has all the attributes of a science, whose essence is precision and prevision, accuracy and fore-knowledge. It has reached the position that its advancement is measured, not by the number of facts collected, but by the number of facts co-ordinated.

Any lighting problem is now susceptible of analysis, so that results can be readily prophesied. Research work in optics, chemistry and physics has contributed its quota, so that not only has the efficiency of the electric lamp, for example, been increased sevenfold within this period, but also the methods of utilizing the greater light have been greatly improved.

Many other instances of lighting progress can be cited, particularly the case of the illumination of the Panama-Pacific International Exposition. Here the daring imagination of an illuminating engineer has been materialized in a form of wondrous beauty and utility. Among other features this exposition is unique in the color scheme. Soft travertine shades harmonize with the surrounding hills and water by night as well as by day largely by means of the artificial lighting of the building facades. Notwithstanding the feeling of doubt that prevailed during the construction period, the completed conception more than justifies the claims of its sponsor. The indirect or masked system of lighting, together with the marvellous scintillator effects are a spectacle never to be forgotten. This is not merely an art, but a science, and the creator is at once an artist and an engineer.

Illuminating engineer is like all other branches of engineering in that proper recognition is not generally accorded it. This general lack of appreciation has formed the subject of much discussion among the engineering societies, the latest being at a recent meeting of the American Institute of Electrical Engineers. Perhaps the clearest statement of the cause was given by Professor George F. Swain of Harvard University, who placed the blame upon the engineers themselves. As compared with the other professions engineering training tends to narrow rather than broaden the view. In his estimation, breadth of view is one of the first qualifications for leadership and consequently he urges that engineers give more attention to history, literature, psychology and other subjects which give a broad outlook upon life. In this way the general status of engineering can be raised and the engineer assume his proper function as a leader of men.—Journal of Electricity, Power and Gas.

School Districts Must Settle With Contractors

A newspaper dispatch from Salem, Oregon, says: "School districts failing to comply with the law providing that any person entering into a contract with the State or any municipality, county or school district for the construction of buildings shall execute a penal bond guaranteeing payment of claims, are liable for damages, according to a decision of the Oregon Supreme Court. The decision was made in favor of the Northwest Steel Company against School District No. 16, Umatilla county. In awarding the contract for a schoolhouse the district failed to exact a bond from the contractor, and the steel company sued the district because of the contractor's failure to pay for the material. The Circuit Court dismissed the case on the ground that a bond was discretionary, but the Supreme Court held it was mandatory."

Pittsburg Heaters at the P.-P. I. E.

The Pittsburg Water Heater Company of California, with offices at 237 Powell street, San Francisco, has received some splendid testimonials from customers, and these pleasant words are the more appreciated because they have come entirely unsolicited. The following letter from Mr. M. R. Margerum, of the New Jersey Commission, in charge of the New Jersey Building at the Panama-Pacific Exposition, is one of many similar communications received:

NEW JERSEY COMMISSION TO THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION
April 28th, 1915.

Pittsburg Water Heater Company of California,
237 Powell St., San Francisco, Cal.

Gentlemen:—The water heater which your company installed in the New Jersey Building on the Exposition grounds, is giving such thorough satisfaction that I feel you should be given due credit for marketing such a perfect article. It gives us great pleasure to write you this letter, especially since it is entirely at our initiative and without any request from your firm or any representative.

Very truly yours,
(Signed) M. R. MARGERUM,
Assistant to the President.

School Architecture Bulletin

State Superintendent of Public Instruction Churchill of Portland, Ore., will soon issue a bulletin stating the standards of school architecture affecting the rural districts. The pamphlet will be patterned somewhat after the one issued by the California State Department of Public Instruction. It will contain plans, specifications, etc., for model school houses, and in addition will carry information concerning their probable cost and kinds and character of materials required. Moreover, a portion will be given over to plans for playgrounds and apparatus and suggestions concerning their installation.

Business "Picking Up" at Portland, Ore.

EDITOR THE ARCHITECT AND ENGINEER:—

Since writing early in the year there has been a decided improvement in the conditions governing building operations in Oregon. Most of the architects have their boards covered with preliminary plans and inquiries are more frequent for estimates.

More than $17,000,000 in paving bonds alone have been assessed against property, and even though they may be paid for in ten installments, property owners, doing little or no profitable business are hard hit and the city has been obliged to appropriate money with which to pay interest on these. This and nearly a hundred thousand lots sold on the installment plan (the bonds go East and interest follows) take much money which would otherwise remain at home and tide one across the slough of slack times.

Of course Portland is no exception to that same condition which has obtained in other places, nevertheless we, each of us, have to meet these conditions and for the many, there is not the wherewithal to meet payments due, and coming due. Maybe we have learned a lesson, but I doubt it. The "double your money in six months" real estate man is good lunged, long winded, splendidly loquacious, and seems to be able to extract his victims' small change, hard times or not.

Bids are being advertised for $1,250,000 county road hard surface pavement, for this (Multnomah) county. Some twenty kinds of paving may be figured and the competition is keen, out of which we hope to get some low proposals, and we don't envy the task in store for the county commissioners and Roadmaster J. B. Yeon.

Taking this proposed construction, together with the scenic road up along the Columbia to Hood river, Portland will have an attraction not equalled in the United States.

The Columbia river road should be thrown open to the public some time next month, and we are pleased to note that with all the expenditure of money, millions of it, "graft" is a word which has not been applied to any of its features, thanks to Mr. Yeon and the commissioners.

The Meier-Frank building, Doyle & Patterson, architects, is rapidly approaching completion. The Dinwiddie Construction Company have made rapid time and are entitled to much credit in overcoming difficulties not foreseen.

Sutton & Whitney (formerly Sutton & Weeks, of San Francisco) have several buildings on the way, and are quite busy making preliminary estimates for still further construction.

J. V. Bennes has been selected as architect for a large state building at Corvallis, while W. C. Knighton, State Architect, has just let to Olson & Johnson, the ward building, an additional unit to the Eastern Oregon Asylum. Olson & Johnson were the contractors on the original building and it speaks well for them that they landed this present job.

Emil Schacht & Sons are architects for the Russel-Blythe "flat-iron" building, and while the original plans called for a single story, tenants enough have been secured to justify adding more floors.

The Inter-State bridge is moving along rapidly. Porter Brothers have the general contract, while McCreary & Williard of Spokane will erect all the steel. This calls for over a million dollars expenditure and a year or more for erection. Steel deliveries will commence in July.

The Celilo canal, which has been under construction for several years, is completed and navigation is open to the Upper Columbia, several hundred miles from the ocean. We are expecting this to be of material help in wheat deliveries from the great wheat belt in Eastern Oregon and Washington.

The new Hill line of palatial steamers from the mouth of the Columbia to the Golden Gate, are meeting with success; a large percentage of travel to the Panama Exposition is going and returning that way.

The consolidation of all the commercial bodies here gives a "New Chamber of Commerce," with an annual working capital of $250,000, with which it is presumed more will be accomplished.

We are pleased to note that your magazine is going on, travelling the prosperity road, and seemingly has reached a very enviable position among the great publications of its kind.

ALBERT J. CAPRON.

Trade Notes

Mr. Oswald Spier, formerly of the Levensaler-Spier Corporation, San Francisco, is again associated with the Gladding, McBean Company, having become their Los Angeles representative.

Mr. I. F. Littlefield, president of W. P. Fuller & Company, has returned to San Francisco after several days' visit to Southern California. In company with Chas. R. Root, general manager for Southern California, he inspected the Los Angeles branches, and also spent some time at the Fair in San Diego.

J. H. Burnett, of the Burnett Iron Works, Fresno, and one of the pioneer foundry men in the State, has again assumed active management of the company after being more or less inactive in the business for two years. Mr. Burnett states that Messrs. John Brooks and R. B. Thompson, vice-president and secretary respectively, are no longer associated with the firm.

FURNACE ROOM, PACIFIC COAST STEEL COMPANY

Architects Visit Pacific Coast Steel Plant

BY a happy combination of circumstances the convention of the Architectural League of the Pacific Coast and the Architectural Exhibition were both held the same week that the San Francisco Architectural Club, the San Francisco Chapter, American Institute of Architects, and the San Francisco Society of Architects had planned a visit to the plant at South San Francisco of the Pacific Coast Steel Company. This industry is one of the most important of San Francisco's many enterprises and the visit of the architects to the big plant proved a distinct revelation and impressed the visitors with the capacity of the local company for producing the various sizes of steel angles as well as a full line of sizes of corrugated and plain reinforcing rods or bars, ranging from three-eighths to one and five-eighths, with possibilities of manufacture up to three inches, if desired. These, with the Pacific Coast Steel Company's production of merchant steel, for all its variable uses, soft rivet steel, high tensile rivet steel, curb bars and in the Seattle branch, steel rails, offer a variety of products to meet the demand for which is now keeping busy a force of over 400 men in the South San Francisco plant alone, with the Seattle plant yet to be heard from. Theirs is the basic Open Hearth method of manufacture, which it is claimed is the process by which the most uniform product can be obtained. Their plant is most modern. It covers twenty acres within the factory enclosure, with six acres outside. There are seven principal buildings. The machinery is run by two eight hundred horsepower motors. The three furnaces are constructed of structural steel sections and masonry, with an interior lining of silica brick, the bottom being of sintered grain magnesite, each furnace having a capacity of thirty tons, a fresh tapping being made every eight hours.

The architectural party which visited the Pacific Coast Steel Plant on June 12th, numbered one hundred, and as they alighted from the special train, placed at their disposal, numerous steam whistles from this and neighboring plants blew blasts of welcome, with almost deafening shrillness and force. The first visits were to the ten-inch rolling mills where ten to forty tons per hour of three-eighths inch to one inch corrugated bars are turned out. This mill is now turning out finished products at a rate equal to the fastest known production records. The visit to the Open Hearth furnace room was of special interest and the visitors seemed fascinated as they watched the metal flow into large ladles of thirty tons capacity in a stream of from six to eight inches diameter. From the ladles the metal was poured into ingot molds. It was shown how, when sufficiently cooled, these ingots were taken to a reheating furnace and from there to the ingot mill where it is rolled down into

CASTING SIDE OF MOULDING ROOM, PACIFIC COAST STEEL COMPANY

ROLLING ROOM, PACIFIC COAST STEEL COMPANY

billets. Thes billets are again reheated and by continued rolling reduced to desired forms and thicknesses. The laboratory tests made by the company are unusually thorough, comprising chemical, check, bending and physical tests. Consequently their product has been found to pass all subsequent and outside tests and inspections, whether by government or private engineers. The United States Government, the Harbor Commissioners, San Francisco Engineering Department and others accept the Pacific Coast Steel Company's product as meeting all stringent requirements and complying with standard specifications.

Thus, Mare Island uses their high tensile rivet steel, while construction material for Yolo Basin bridge (for which 3,000 tons of from three-eighths inch to one and one-eighth inch rods were furnished in nineteen days after receipt of order), Napa bridge, Watsonville bridge, Stockton street tunnel, Twin Peaks reservoir, Fifth street sewer, Mission street viaduct, Civic Center auditorium, New Call building, Sharon building, Hale Bros. building, Young Men's Christian Association building, White House, and many other Class "A" structures have been confined to the Pacific Coast Steel Company's product. Chinese and California pig iron are largely used in the manufacture. It is interesting to note that large quantities of the finished steel is shipped back to China and other Oriental ports. Steel bars are sent as far east as Salt Lake City, and a profitable and increasing trade is being built up with Mexico and South and Central American points.

The mills are protected from fires by an automatic fire alarm service, with a reserve fifty thousand gallon water tank. The officers of the company are:

E. M. Wilson, president.
D. P. Doak, vice-president.
Wm. Pigott, vice-president.
W. S. Burt, secretary.
E. S. Houdlette, assitant secretary.
N. A. Becker, mill superintendent.
Jas. Earley, open hearth superintendent.
Jno. B. Leonard, district sales manager.
S. S. Lawrence, sales manager foreign department.
D. E. McLaughlin, sales manager southern territory.
T. S. Clingan, manager Seattle mill.

About $2,500,000 has already been invested in this Pacific Coast enterprise and still further enlargements and improvements are planned.

The tired, but enthusiastic body of architects that returned to the city after their outing will one and all be permanent believers in the slogan: "San Francisco has them all beaten when it comes to making steel bars."

A California China Clay

"Kaolin" is the trade name of a new mineral which was opened up early in 1914 and reveals a one million ton deposit. This mine is located at Ione, Amador county, California. When first operated it practically "saved the lives" of several local manufacturing concerns whose plants were tied up by reason of their inability to procure the English China clay. Kaolin's adoption and continued use by porcelain works, paint works, cotton mills, soap factories, paper mills, etc., has been enthusiastic and it completely eliminates the need of the imported China clay.

The chemical analysis is as follows:

Aluminum oxide (China clay).....38.89
Silica 47.16

Kaolin's by-product (silica) is used for imitation marble and composition flooring. It furnishes the finest glass sand, equal to Belgian sand. The writer has seen flint glass made from this silica.

Kaolin is 20 per cent cheaper than English clay. About 40 tons a day are now being shipped, the Southern Pacific railroad running about 1500 feet distant from the mine and affording almost perfect and economical transportation.

Fifty thousand dollars has been expended on the refining plant and development. Leading San Francisco men make up the Products Development Company, which own and operate the Kaolin properties. Its President is Ralph H. Moore, for twelve years with Risdon Iron Works and for seven years chief engineer and general manager of Spreckels Sugar Company. For the past two and one-half years he has acted as consulting engineer in extensive improvements made at California-Hawaiian Sugar Refinery. The Vice-President is G. H. Moore, and the Secretary and Treasurer, S. E. Haycraft. Their executive offices are in the Holbrook building, San Francisco.

Trade Note

L. E. Boyle has severed his connection with the contracting department of Parrott & Co., and is succeeded by Frederick Bennett, formerly in charge of the Los Angeles office. Mr. Boyle has taken up the insurance business.

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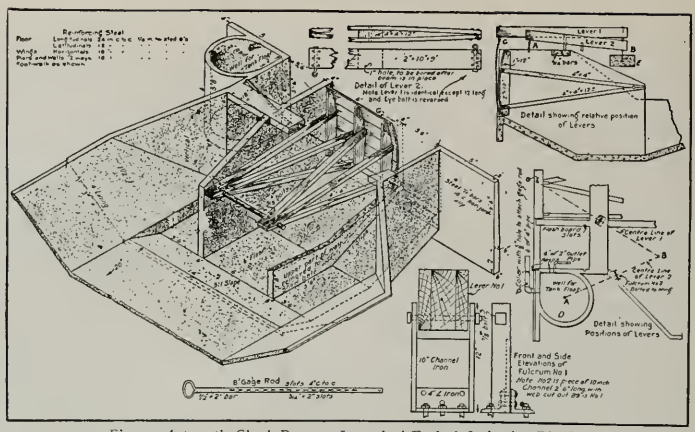
Detail showing relative position of Levers
Detail showing Positions of Levers
Front and Side Elevations of Fulcrum No 1
10" Channel Iron
5' Gage Rod

Fig. 1. Automatic Check Drop on Lateral of Turlock Irrigation District

Automatic Check Gate Structure for Turlock Irrigation District, California

CHECKS are structures used in flat country to check up, or completely to stop off water in an irrigation canal and thus raise the head to facilitate diversion into a lateral. The check is located just below the mouth of the lateral. In the accompanying drawing is shown an automatic check which holds the water above it to constant level without attendance which is necessary for the operation of the more common forms of checks. This check is being used in the Turlock Irrigation District, California, to replace worn out timber checks.

Referring to the drawing the essential parts of the structure are discerned to be, (1) the concrete implacement for the gate; (2) the radial gate; (3) the float well, and (4) the system of operating levers. Structural details of these parts are shown by the drawings. It will be noted that there are two levers AB and BC fulcrumed each at mid-length. At lever end A, directly over the well, is hung a tank float playing up and down inside the well. End B of lever AB projects under end B of lever BC, and the two levers are connected at the intersecting ends B. From this point is also hung a counterweight. End C of lever BC attaches by a lifting chain to the radial gate leaf. The system is "balanced" with the gate closed by partly filling the float well with water.

The manner of operation is as follows: Assuming that there is no water in the canal and that the gate is closed. The free end of the well until pipe is placed at the level at which it is desired to retain the canal water. The outlet pipe is placed at a lower level than the inlet pipe. Now as the water comes down the canal it is checked or dammed back by the gate and its level rises until at the level of the inlet pipe when water begins to enter the well. As the water in the well rises it raises the float tank, the levers are pulled down by the counter-

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weight at B and the gate is lifted. Water passes under the gate until level in the canal above is restored to the level of the inlet pipe. Then this surplus water in the well drains out through the outlet pipe, the float tank sinks, the counterweight rises, and the gate closes. It takes about eight inches head of water on the gate for it to adjust automatically.

The particular structure shown in Fig. 1 combines both an automatic check and a drop located on a lateral, which carries about 200 sec.-ft. of water. The height of the open ends of both inlet and outlet pipes may be adjusted, as they can be swung about on the threads of the elbows. About two-thirds of the way up these two pipes the gage rods are attached. The slots in the rods are slipped over staples set in the concrete walls near the top and padlocks through the staples over the bars lock the device.

The bucket or tank hanging in the well is made of No. 16 galvanized iron, and is 44 inches in diameter and 3 feet high; the top laps over a ½-inch round pipe stiffener and is riveted thereto. Two straps of ¼x1½-inch iron pass completely around the bucket at right angles to each other and are brought together 2 feet above the rim. The concrete counterweight hung below the intersection of the lines of the two levers is of convenient shape and weighs about 300 pounds more than that portion of the gate to be lifted by it. The automatic radial gate is built of double 1-inch Oregon pine. Before being set in the concrete the ends of the pipe axle are bored and 12-inch pins are thrust through them which prevents the axle turning in the concrete.

Where the concrete is mixed by hand on structures like the one described, the Turlock district finds it costs $20 to $22 per cubic yard, while machine-mixed concrete on large structures runs about $13 per cubic yard. The mix used is one part cement to three parts sand and five parts broken stone. Cement costs $2.75 per barrel f. o. b. Turlock, and sand usually is close at hand. Stone costs $1.75 per cubic yard and the hauling 17 cents per mile per yard additional. The reinforcing bars cost 3¼ cents per pound at San Francisco. The total cost of a structure like the one in Fig. 1 is about $300.

MAKING CEMENT IRRIGATION PIPE OUT OF MARYSVILLE SAND

This cut shows a crew of men making cement irrigation pipe at PRATT BUILDING MATERIAL CO.'S Marysville sand plant. Marysville sand from Yuba River makes the best cement pipe—so engineers and contractors say.

Pratt Building Material Co.,
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The data for this description in Engineering and Contracting was secured and the illustration redrawn from a bulletin by F. C. Scobey, irrigation engineer, Office of Experiment Stations, United States Department of Agriculture.

Architectural Specialists

W. J. Hoggson, head of a New York and Chicago contracting firm, has written an article on "How to Build," some of which is good and some not so good. Unlike most contractors who break into print, he believes in the architect, but would prefer to see him specialize in his work rather than attempt to design any and everything. To quote:

"The selection of an architect to design a building is a most serious matter. Architecture is like medicine or law, only slightly, for most architects are yet 'general practitioners' and cheerfully assay to design any kind of a structure, previous inexperience causing no qualms nor fears of failure.

"A man who has made a success of picturesque country buildings, to start on a modern skyscraper is pretty apt to cost the owner a considerable sum through his inexperience, so the selection of a designer for a building should be made by some one who has through long experience and practice found the troubles and comes to the problem with knowledge and experience gained through work of similar nature.

"If the building owner can obtain the aid of some one who is familiar with the work of many architects and who is competent to select a specialist, the owner will never regret it; his fee is earned many times over by the special training he is able to bring to the solution of your problem.

* * *

"Why should not an owner who determines to put up a building, and is willing to expend a reasonable amount of money for the purpose, be able to go to some firm and order one, as a navigation company orders a ship, complete, ready for sea? I firmly believe that the time is coming, and soon, when this will be possible. There is no reason why a man who builds in the expectation of receiving a return on his investment of 8 per cent should find out when his building is finished that his return is less than half this percentage; and this is what happens very, very often.

"The vessel that is guaranteed to make a speed of twenty knots would hardly be accepted and paid for if she could make only ten knots. There are firms of builders who have the ability, experience and equipment to do exactly this thing, and if they would accept the responsibility, the time and effort that is now wasted in the erection of buildings would be largely eliminated and that saving could be used to the great benefit of the building erected."

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Review of Recent Books

of Interest to the

Architectural and Engineering Professions

By CHARLES HENRY CHENEY

THE MODERN CITY AND ITS PROBLEMS. Frederic C. Howe.

This is the book of the year for those interested in city problems of any kind. Written by one of the country's ablest students, who served many years in the city council of Cleveland, and now is United States Commissioner of Immigration at New York, it shows a complete understanding of the difficulties to be met in attempting to improve the architecture of our cities, housing conditions, and the legislative functions of government.

In discussing City Planning in America, Mr. Howe points out that "The World's Fair in Chicago in 1893 marks the beginning of city planning in America." People left it with the inquiry: "Why cannot cities be built like a world's fair; why should we not employ architects and artists in their designing; why should we not live in cities as beautiful as this fugitive play city, that will disappear at the end of the summer?"

The author is thoroughly familiar with conditions in all parts of the country, as frequent apt allusions to San Francisco, Los Angeles, and other cities on the Coast testify. The improvement of building and street architecture in cities is very sensibly discussed. He even goes so far as to quote that "In Paris prizes are given to architects who design the best street facade during the year. The city also makes awards for the best designs for buildings. It remits a part of the street tax to the owners of approved structures."

Mr. Howe's previous books have taken up, particularly in "European Cities at Work," the great progress in city government, city planning and civic art in all parts of the world, but this new volume seems to sum up more clearly and outlines more completely the recent thought in this country, with only such allusions to foreign cities as can be used here. The book is full of most interesting and convincing facts and figures and will be of great value to a better understanding of America's great problem—the city.

Published by Chas. Scribner's Sons, New York, 390 pages. $1.50 net.

THE ART OF THE LOW COUNTRIES., by W. R. Valentiner.

These excellent studies of that great school of art in Holland and Belgium during the fifteenth century fill a place in art literature that it is difficult for those desiring information to find a thorough discussion or appreciation of. As editor of Art in America, and a member of the staff of the Metropolitan Museum of Art of New York, Mr. Valentiner has had unusual opportunity to influence the appreciation of art in this country. In this volume he has gone much farther, giving us a most delightful and complete criticism of the primitive painters of Holland, of Rembrandt, Reubens, and Van Dyke. Particularly interesting are the chapters treating of the old masters now owned in America. The many splendid illustrations make this a record of the art of the Low Countries worth having.

Published by Doubleday, Page & Co., New York. $2.50 net.

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Famous Architects Make Suggestions for Highway Beautification

The following suggestions have been adopted by the Lincoln Highway Committee of the American Institute of Architects and are being sent out by Elmer C. Jenson of Chicago, chairman of the committee appointed by President R. Clipston Sturgis of the institute:

Encourage the location of parks and public or other important buildings contiguous to the highway.

Locate monumental markers at the entrances to villages, towns and cities.

Locate imposing monuments at all State lines.

Encourage construction, by private funds, of mile sections in various localities, in accordance with approved designs, to serve as examples of desirable treatment.

Simple, attracting markers at road intersections, and more imposing markers at intersections of official tributaries.

Use of hedges instead of fences where conditions permit.

Memorial bridges at important rivers and streams.

Central Electric Company

Mr. J. M. Carlson, for more than a dozen years engaged in the electrical contracting business in San Francisco, has purchased controlling interest in the Central Electric Company, and has assumed active management as president and general manager. Mr. Carlson succeeds Mr. Boynton, the latter having gone into the contracting business independently. Mr. Carlson is well known to the architects and building interests, and with the ample financial backing which he has secured, undoubtedly will make a success of the venture. The company is in a position to handle almost any electrical job, large or small, in San Francisco and the bay cities.

During his association with the Central Electric Company Mr. Carlson has successfully superintended installing the electrical equipment in a number of the most prominent buildings at the Panama-Pacific Exposition, including the Fine Arts Annex, and the Yellowstone Park Concession; also the wiring of the dance pavilion at Eddy and Taylor streets, from plans by Cunningham & Politeo; Morton Apartments at Geary and Polk streets, C. H. Barrett, architect; Greenwich Realty Residence apartments, T. Patterson Ross, architect; and the apartments on Post street, between Larkin and Polk, Rousseau & Rousseau, architects.

A CERTIFIED ARCHITECT with ten years' first-class experience, would like to hear from architect or contractor in city or growing country town for part salary where there would be an opportunity to display hustle and energy in getting business for commission or partnership. Address, B. J. W., care Architect and Engineer, San Francisco.

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Office Building and Church Combined

The Chicago Herald prints an impressive picture of a proposed new skyscraper somewhat in the style of New York's Woolworth building, but terminating in a structure resembling Trinity church, Boston. The reader would be excused for thinking that the drawing represented the proposed new Methodist Memorial church in New York. Not so, however. It is the architect's sketch for the Chicago athletic association's club-house. But perhaps they propose to rent the top floors to an aspiring congregation. The new building is expected to cost about $2,500,000.

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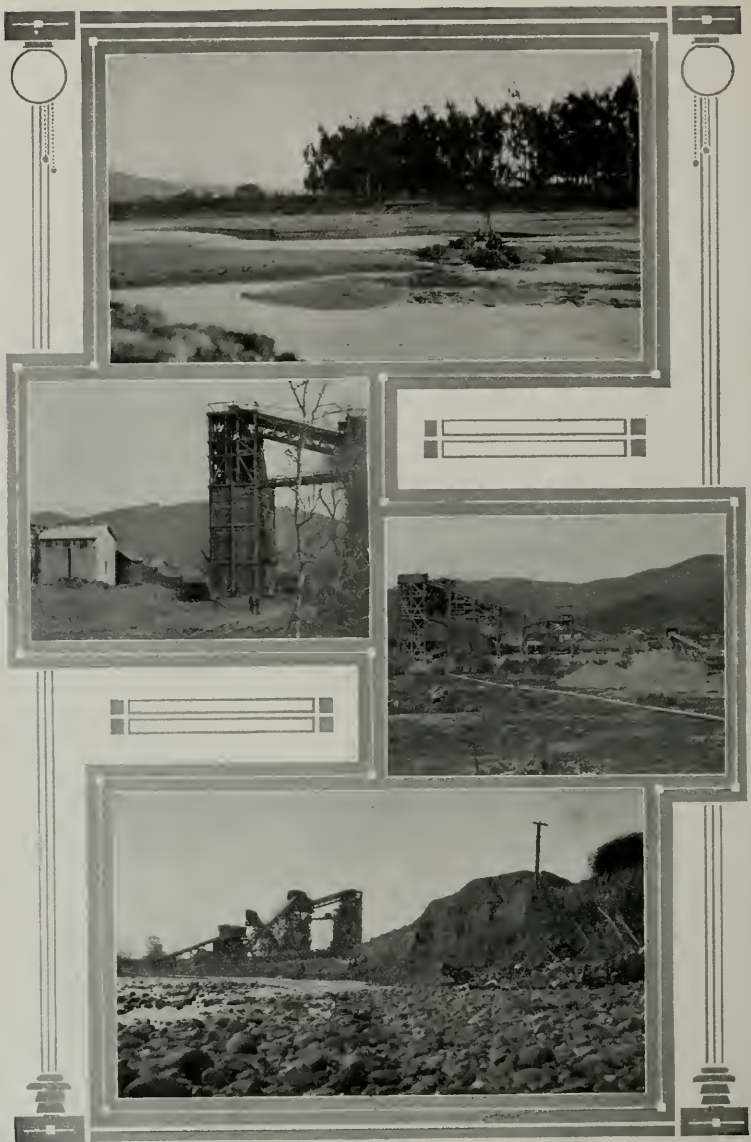


(Fig. B)—Alameda Creek and its sand and gravel deposits from which fine quality concrete is made. Reading from top to bottom: Niles River, showing sand and gravel deposits; substation and bins; view of plant; showing bowlders and main plant of the Niles Sand, Gravel & Rock Co.

Sand and Gravel Deposits of the Niles Sand Gravel & Rock Company

By H. J. MADDEN

AN interesting as well as successful plant is taking large quantities of sand, gravel and rock from a gravel bed near the town of Niles, in Alameda county, to aid the purposes for which such material is used in various places, such as road, bridge and building construction, or wherever concrete is used for any purpose. The process is very unique and successful and represents a total investment of about two hundred thousand dollars ($200,000).

The Niles Sand, Gravel & Rock Company was placed in operation in the summer of 1912. The pictures shown are of the plant and gravel deposits.

The Alameda creek at Niles is quite wide, as shown in the full-page illustration, and the bed is filled with a deposit of sand and gravel washed down from the hills by the heavy rains of many years. There are also some very large bowlders, as shown in the same illustration, which also gives a view of the main plant. The sand and gravel must be washed out, the sand separated from the gravel and the gravel itself separated by means of large revolving screens into the various sizes that are commercially valuable. Those that that are too large are run through crushers and make a very fine grade of crushed rock.

There is a large Lidgerwood dragline excavator operated by electric motors. This excavator runs on rollers, and by means of the long boom gathers the material and deposits it in the cars that carry it up the inclined cable railway where it is dumped into a hopper and fed on to a belt-conveyor that takes it to the top of the plant. The motor installation on the excavator consists of a 112-horsepower motor to operate the dragline bucket, a 22-horsepower motor for revolving the excavator and two small motors of six horsepower each, direct-connected to air compressors to furnish air to operate the brakes. This excavator when put in service was the first of its kind to be operated with electric power.

A general view of the plant (Fig. A) shows the inclined railway hoist, the hopper and belt-conveyor to the top of the crushers. The large storage bins are in the rear and are better shown in the picture, which also shows the railway track from the main Southern Pacific line and the method of loading by gravity from the large bins. The loaded cars of material are hauled up the incline by a steel rope around a drum, the power for which is furnished by a 75-horsepower motor. The belt-conveyor consists of a conveyor-belt thirty inches wide, and is also operated by a 75-horsepower motor.

When the material, sand, gravel and rock, has reached the top of the main plant those rocks over two and one-half inches are passed down to the crushers and reduced to a proper size. The balance of the material is carried across to the top of the bins, the dirt is washed out by means of two large streams of water through nozzles and the sand separated from the gravel which in turn, is run through ten long revolving screens to get the exact sizes for

(Fig. A)—View of plant, showing belt-conveyor and storage bins

(Fig. C)—Storage piles of rock, sand and gravel

the proper bins, and all sizes are again washed with clean, fresh water under high pressure in each of the ten screens; and the sand is washed in four additional sand-washing boxes, making a concrete or top-ping-sand of the very best quality. After the material has been carried to the top of the plant by the belt-conveyors, the other movements, including the loading of the cars, are accomplished by means of gravity.

There are two crushers to handle the bowlders and rocks that are too large for commercial purposes and reduce them to crushed rock of a proper size—a disc-crusher of a capacity of seventy tons per hour that handles all that will pass through a 4-inch opening, and a gyratory crusher of a capacity of fifty tons per hour that handles those of a larger size. Each crusher is operated by a 50-horsepower motor. The material from the two crushers is carried back by a belt-conveyor twenty-

(Fig. D)—Part of plant of Niles Sand, Grovel & Rack Company, showing bunkers, loading facilities and locomotive crane in operation

EXPOSITION AUDITORIUM, SAN FRANCISCO CIVIC CENTER
Howard, Meyer & Reid, Consulting Board of Architects

four inches wide, which is operated by a 15-horsepower motor, and dumped on the main conveyor, so that the crushed rock is thoroughly mixed in with the uncrushed and the mixture makes a particularly good grade of concrete material. The water for washing the material is pumped from fresh water wells adjacent to the plant by means of a 1000-gallons-per-minute centrifugal pump operated by a 50-horsepower motor, and an interesting thing in connection with this pumping plant is that the water, after having been used to wash the material before it goes into the bins, is used to irrigate many orchards on lands adjoining the plant. This forms an interesting example of conservation.

Materials were obtained from this plant for the new Municipal Auditorium in San Francisco, the new reinforced concrete bridge across the river at Niles, and many other notable structures. This gives an idea how Nature furnishes the materials to be wrought by man into works to protect us from her ravages.

The central views in the full-page picture (Fig. B) do not need any particular explanation. The entire plant, with the exception of a twenty-ton, eight-wheel, steam-driven railway locomotive-crane which is used for switching cars and with the 1⅝-yard clam-shell bucket is also useful in loading cars from storage piles, is operated by electric power, there being motors of a total capacity of over 500 horsepower installed.

Figure C shows part of the various storage piles and the flooded condition of gravel beds in winter.

The vast amount of storage, consisting of over one thousand carloads of washed, crushed and segregated materials, is principally drawn from during the winter months, this being loaded for shipment by a locomotive crane. The modern equipment of the plant, coupled with this storage system, gives to the consumer a perfect service. These storage piles are of correctly sized materials for all classes of work, including concrete aggregates for buildings, bridges, road construction, roofing and paving purposes.

Figure D being a close view of the plant, shows the bunkers and cars being loaded for shipment. Loading facilities are on both sides of the bunkers from a total of sixteen steel chutes; cars containing from 30 to 55 tons are loaded in three minutes. A good road to the bunkers has been put in to take care of the local business at Niles and surrounding country; teams and automobiles can be loaded from the outer chutes of the bunkers and dispatched without interference to the regular car traffic.

One of the many large buildings recently constructed with the Niles Sand, Gravel & Rock Company's material was the Civic Auditorium in San Francisco. In this building there was used approximately ten thousand yards of gravel and crushed boulders, besides a concrete topping which was used for finished concrete work on the floors and balconies.

The Engineering Department of the University of California made elaborate tests with a great many test cylinders of materials from this plant and the concrete made from this sand and gravel gave the greatest possible satisfaction with the result that engineers in all walks of life, for the Federal Government, for the State Engineering Department, for harbor construction work, for all kinds of city construction work or street work, and, in fact, any concrete of whatsoever nature where high compression tests are desired, find these materials to be surpassed by none.

At the plant deliveries are made in sizes of materials and in exact proportion of each size as required for any special or tunnel work.

The special sizes before mixing same are:

No. 1—All sizes mixed from 1½ inch to 2½ inch.

No. 2—All sizes mixed from 1 inch to 1¾ inch; or

No. 2—All sizes mixed from 1 inch to 1½ inch.

No. 3—All sizes mixed from ½ inch to 1 inch.

No. 4—All sizes mixed from ¼ inch to ½ inch. Roofing gravel.

No. 5—Topping, or concrete sand, to ¼ inch.

No. 5—Topping, or concrete sand, to ⅜ inch.

This sand contains all of the fine sand particles as well as the coarse sand and smallest pebbles, such as can readily pass through a screen with ¼ inch round perforations. This is a particularly high grade concrete sand, or topping.

In addition to the above straight sizes the company can supply in any proportions desired any two of the above, or any three, or any four, or any five or any six of the above sizes mixed with or without sand, as ordered, and in the most exact proportions to suit any kind of special work.

This plant in ordinary working days produces thirty carloads per day, but if demands required, from two to three times as much material could be supplied daily. Fully realizing the great losses to contractors who have men at work and no material to labor with, the Niles Sand, Gravel & Rock Company has made service its "hobby" and exercises every care to make deliveries on time, so that contractors generally have learned to depend absolutely upon receiving the same high quality of material and service has been the keynote a large one or a small one. Careful attention to every detail in the improvement of material and services has been the keynote of success.

The extensive plant and gravel beds of this company are located at Niles, but all business of either selling materials or buying supplies is done through the business office in Mutual Bank building, San Francisco, where prompt attention is given to every order, whether received by telephone or mail.

Personal

The Los Angeles architectural office of Kaysor & Biggar has been dissolved. Charles H. Kaysor will maintain offices in Room 618, Wright & Callender building, and Mr. Biggar expects to open an office in the Wright & Callender building.

Architect A. F. Rosenheim has returned to Los Angeles after an absence of several weeks, most of which time was spent in St. Louis.

New Departure in Rotary Oil Burners

Visitors to Machinery Hall, P.-P. I. E., have been impressed with the display made of various oil burners, but none has attracted more attention than a new candidate for public favor—the Ray Rotary Crude Oil Burner. The great heat generated from a moderate size Ray Burner attracts vast interest and amazement, and as visitors watch the big flame of high temperature burning steadily without soot, smoke or carbon, they realize the vast improvements which have been accomplished in oil burners since the time the early types were introduced, when the burners were as crude as the oil they consumed. The Ray Burner has, moreover, the recommendation of simplicity, which also makes it cheaper than other burners on the market.

The Ray Burners are a distinct departure from the regulation type, being a combination of the "air under pressure" and the "Rotary" systems. The oil and air are discharged out of a nozzle like the ordinary straight shot burners, but instead of using a plain nozzle it introduces a centrifugal atomizer within the nozzle. This atomizer is small and cannot become overheated under the most severe conditions, as the entire air blast is passed over it. This atomizer gives a greater distributing surface, permits the use of a lower air pressure and prevents lumpy oil from passing into the air-box. The Ray Oil Burner claims that with a one-fourth horsepower motor it produces a larger and better fire than a compressed-air burner using one-half horsepower motor.

In noting the points of the Ray Burner and comparing it with other burners, the fact remains that it does away with level gears, stuffing boxes, flexible couplings, numerous bearings and gauges, air relief valves, expansion tanks, reducing valves, belts, silent chains, air-compressors, oil gauges, rotary blowers, heavy bed plates, large motors and numerous bearings, thus reducing expense for power and upkeep. Besides this, its simplicity makes it cheaper and more easily run, as in their gravity burners there is only one moving part. The makers claim that although their burner produces a temperature of over 3,000 degrees of heat it is not injurious to the furnace, range or heater wherein it is installed, as all the combustion takes place in the fire box and not in the flues.

Other points claimed are the light weight of the burners, freedom from dangers of explosion, less noise, easy lighting and small freight charges. While the Ray Burners carry with them a guarantee of one year, the manufacturers offer to the first hundred California purchasers a three years' guarantee. W. S. Ray & Co., the makers of

the Ray Rotary Crude Oil Burner, is one of the oldest and best known firms on the Pacific Coast, having been in successful business since 1872. They make, also, the well known Glenwood Range. Their guarantee is, therefore, sufficient protection to purchasers that the burners will be exactly as represented in both quality and efficiency. Those interested in oil burners should see their exhibit in Block 48, Machinery Hall, P.-P. I. E., or call at their wareroom, 220 Market street, San Francisco.

New Electrical Company

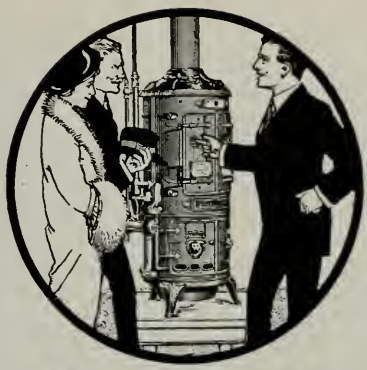
Friends of Mr. L. R. Boynton, founder, and for the past eight years general manager of the Central Electric company of San Francisco, will be interested in the announcement that he has formed a co-partnership with D. S. & G. B. Boynton under the firm name of the Boynton Electric company for the purpose of carrying on a general business in electrical contracting. Offices of the company are in the Rialto building. The firm will figure electrical work anywhere in San Francisco and the Bay cities. Among the buildings wired under Mr. Boynton's personal superintendence while general manager of the Central Electric company are the Fairmount Hotel, Head building, designed by the late William Curlett, and built by Mahoney Bros., the Temporary City Hall, Wright, Rushforth & Cahill, architects, and many other structures of equal prominence. The elaborate electrical decorations for the Portola celebration were installed under Mr. Boynton's superintendence. Prior to his connection with the Central Electric Company, Mr. Boynton was with the Hendy Electric company.

"The Butterfly Map"

Some time ago we published an account of a new method of projection by which the surface of the globe could be shown on a flat plane without exaggeration or distortion. Moreover, this map shows the whole world at once to a uniform scale, so that one linear inch on any part of the map is always equal to the same number of miles. All other world maps show a varying scale.

The new map takes on the form of a butterfly. It was invented by Mr. B. J. S. Cahill, the architect, who is well known to readers of The Architect and Engineer. It has received the endorsement of scientists all over the world. The "Butterfly" Map is now on exhibition in the Liberal Arts Palace, P.-P. I. E., between "The Chronicle" and "The Remington Typewriter."

Architects and engineers are invited to visit this exhibit and inscribe their names in the register.



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(Names and addresses will be supplied upon request.

SAN FRANCISCO PRICES

Common Red Brick, $7 50 per M, ex. cars.
No. 1 Pressed Brick, $35 00 to $40 00 per M. Wire cut, $45 00 per M.
No. 1 Red Pressed Brick, $20 00 to $30 00 per M.
Red Stock Brick, $14 00 to $16 00 per M.
California Portland Cement, C L, $2 30 per bbl., L C L, $2 55 per bbl.
White Cement: Atlas, $6 00 Medusa, $6 00 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 65c per ton, F. O. B. cars.
Bank Sand, $1 00 per cu. yd.
Roofing Gravel, $1 40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22 00 to $25 00 per square, laid.
Brick Lime, $1 35 per bbl., C L.
Finish Lime, $1 50 per bbl., C L.
Hardwall (Gypsum Plaster, $11 00 per ton, carload, 1150 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $15 00.
Oregon Pine, Rough, 2 x 3 to 2x12, $15 00.
Oregon Pine 1 x 4 T. & G. Flooring, No. 1 $31 per M, No. 2, $28, No. 3, $24.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $26 to $28.
Redwood, Rough Common, 1 x 4 and up, $20 00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $20 00 to $22 00.
Redwood Rustic, No. 1, $35 00; No. 2, $32 00.
Redwood Ceiling, No. 1, $29 00; No. 2, $26 00.
Redwood Shingles, No. 1, $2 40 full count.
Red Cedar Shingles, Star-A-Star, $2 40 full count.
Pine Lath, $2 40 per M.
Metal Lath, 15 to 25c per yd., according to quality
1 x 5 Oak Flooring, O. S. Clear, $116 00 per M; Select $75 00 per M.
½ x 2½ Oak Flooring, O. S. Clear, $96 00 per M; Select, $74 00 per M.
1 x 3 Maple Flooring Clear, $71.00 per M; Clear White, $65 00 per M.
White Lead in Oil, 6½c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 74c gal. Raw Linseed Oil, 70c gal.
Turpentine, per gallon, 65 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 50c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4 50 per M.
Clinker Brick, $9 00 per M.
Pressed Brick, $35 00 per M.
Enameled Brick, $65 00 per M.
Red Roofing Tile, $12 00 and $15 00 per square (not laid).
White Cement, $6 00 per bbl.
Portland Cement, $2 50 per bbl.
Lime, $1 50 to $1 75 per bbl.
Hardwall Plaster, per ton, $9 00 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $19 00 to $22 00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17 00 to $21 00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35 00; No. 3, $32 50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36 00; No. 2, $31 00.
Redwood, Rough Common, $20 00 to $24 00.
Redwood Rustic, No. 1, $34 00; No. 2, $33 00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33 00; No. 2, $28 00 per M.
Redwood Shingles, 4 bills. to M, No. 1, $2 25; No. 2 $1 75.
Red Cedar Shingles, 4 bills. to M, Star-A-Star $2 75.
Pine Lath, 1½ in. x 4 ft., $3 25 per M, 1½ in. x 4 ft. $3 65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 68c gallon.
Turpentine, bbls., 65 to 70c gallon.
Crushed Rock and Gravel, $1 05 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7 00 per M, C L.
Pressed Brick, Wire Cut, $30 00 per M, C L.
Portland Cement, $2 40 per bbl. carloads.
Crushed Rock and Gravel, 85c per ton, ex. cars.
Sand, $1 00 yd., ex. cars.
Roofing Gravel, $1 50 per ton.
Lime, $1 35 bbl.
Hardwall Plaster, $15 00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7 75 per M, del.
Face Brick, Wire Cut, $31 00 per M C L.
Cement, $2 40 per bbl., C L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1 50 per ton.
Lime, $1 35
Hardwall Plaster, $15 00 ex. whse per ton.

FRESNO PRICES

Common Brick, $9 50 per M, del.
Face Brick, Wire Cut, $35 00 per M, C L.
Cement, $2 64 per bbl., C L.
Crushed Rock and Gravel, $1 35 per ton.
Black Face Brick, $25 00 per M—F. O. B.
Sand, $1 00 per yd., del.
Roofing Gravel, $1 85 per ton.
Lime, $1 50 bbl.
Hardwall Plaster, $14 00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9 00 per M, del.
Face Brick, Wire Cut, $37 00 per M, C L.
Cement, $2 [illegible] per bbl., C L.
Crushed Rock and Gravel, $1 80 per ton.
Sand, $1 00 per yd., del.
Roofing Gravel, $2 00 per ton.
Lime, $1 50 per bbl.
Hardwall Plaster, $15 00 per ton, ex. whse.

NORTHERN CALIFORNIA POINTS

Common Brick, $11 00 per M, del.
Face Brick, Wire Cut, $35 00 per M, C L.
Cement, $2 65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C L.
Sand, $1 00 per yard.
Roofing Gravel, $1 50 per ton.
Lime $1 40 bbl.
Hardwall Plaster $14 00 per ton, ex. whse.

Kind of Sash Cord to Use

Experience has proved that solid braided cords are much more durable than cable laid or hollow braided cords, metal chains or tapes, when used to run over pulleys. With the strands doubling on each other as they do, having freedom of play without slipping, the strain in running over the pulleys is equally distributed over all the strands. It is also free from internal stresses which destroy laid cord so quickly. The importance of these facts will be realized by anyone who has been confronted with a broken sash cord, which prevents the opening or closing of the window. The Samson cordage is made from solid braided cords, which is claimed to be the most long lived of any sash cord on the market.

The Samson spot cord is made of extra fine cotton yarn, and is carefully inspected and guaranteed to be free from all imperfections of braid or finish. It runs easily over the pulleys, with the minimum of abrasion, and will wear, it is claimed, on the average three times as long as the best bronze chain, although it costs only about one-fifth as much.

Book Review

THE CITY PLAN. A new quarterly published by the National City Planning Conference.

This new magazine is timely and will be welcomed by the many new organizations and commissions for city planning in California. In discussing "A State Plan for Massachusetts," Mr. Arthur C. Comey, member of the Massachusetts Homestead Commission, points out the difficulties of city planning commissions in several closely contiguous cities—Boston is the center of thirty-eight neighboring municipalities. It is suggested that the State Highway Commission should see that new highways are planned for and that the plan for the future be worked out well in advance.

Charles W. Elliott, Pres.-Emeritus of Harvard University discusses "The landscape architect as the ally of the Sanitarian"; Hon. George McAneny, Vice-Mayor of New York City, tells concisely and forcibly of the planning of the metropolis; and Walter D. Moody, managing director of the Chicago Plan Commission, has an exceedingly interesting statement of experience in how to go about city planning.

Published by the National Conference on City Planning, No. 19 Congress street, Boston. $1.00 per year.

Terra Cotta Contract

The Steiger Terra Cotta and Pottery Works of San Francisco submitted the low bid and has been awarded the contract for the terra cotta work on the new Capitol National Bank building, Sacramento. R. A. Herold, architect.

Hollow Metal Elevator Doors

ONE of the most important openings in a building and one that requires utmost protection is the elevator shaft. Absolute protection and safety from fire can be obtained by the use of the Dahlstrom Hollow Metal Doors and Trim.

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New Manager for American Keene Cement Company

Percy R. Stuart, manager on the Pacific Coast for twelve years of the Roebling Construction Company, which carried on a large business prior to and following the San Francisco fire, is now vice-president and general manager of the American Keene Cement Company, with offices in the Monadnock building, and works at Sigurd, Utah. Stuart's wide acquaintance with the architects and building interests of San Francisco and the bay cities, should make him a valuable addition to the executive force of this fast growing industry. At no time in the history of the building game has Keene cement enjoyed a greater call than today. The fact that it is being used very extensively with lime mortar as a plastering material is undoubtedly responsible for the increased use of the product, and as soon as architects become better acquainted with its superiority over other plasters (and at a material reduction in cost, too), Keene cement will probably be in universal demand for all kinds of interior plaster work.

The combination with lime mortar assures a substantial, sound-proof and preservative wall that is less liable to cracks and deterioration than other plasters. The common impression that Keene cement is good only for imitation tile work, scagliola and artificial marble is unfortunate, for the fact is, this cement commends itself for plaster work throughout a building, and besides being more effective it costs no more. One of the largest contracts now being executed is the interior plastering of the new San Francisco City Hall. Architects and builders who have inspected the work are delighted with the results obtained.

The same success has marked the plastering of the Polytechnic High School. In both cases a mixture of Keene cement and lime mortar was used in the scratch, brown and finishing coats.

Among other buildings where Keene cement guaged with lime mortar has been used with satisfactory results, are the Monadnock building in San Francisco, and the H. W. Hellman office building in Los Angeles. Marble work removed in the lavatories of the Monadnock building disclosed sections of the plain metal lath, which had been covered with a coat of Keen cement gauged with lime mortar, and the lath was found to he in splendid condition, entirely free from rust. This proves, beyond speculation, the preservative qualities of the plaster.

Associated with Mr. Stuart in the San Francisco office, is Ben F. Bickel, whose father, J. M. Bickel, is the founder of the American Keene Cement Company.

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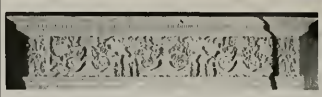

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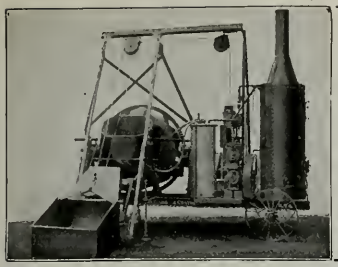

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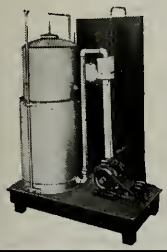

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The Trussed Concrete Steel Company has recently published a pamphlet illustrating a new type of construction, consisting of pressed steel frame work with metal lath, stucco, concrete and plaster. The Kahn Pressed Steel Construction has a wide field of application, its two principal fields being: First, in connection with floors of stores, apartment houses and small buildings generally; and second, in multiple or group houses for mines and industrial plants. Writing of this form of construction, S. M. Fechheimer says:

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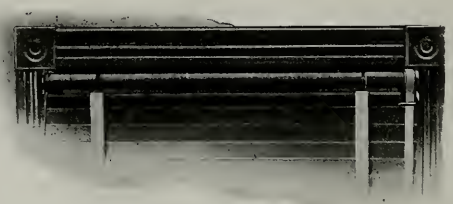

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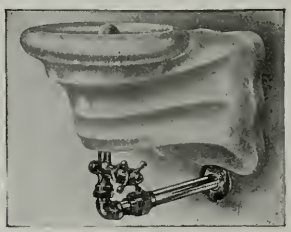

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Thomas Jefferson and the Origins of the Classical Revival in America (7 illustrations) by Sidney Fiske Kimball.

With the Moors in Andalusia (6 illustrations) by Charles Upton Clark.

Masterpieces of Aboriginal American Art. III. Mosaic Work, Major Examples (12 illustrations) by William H. Holmes.

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